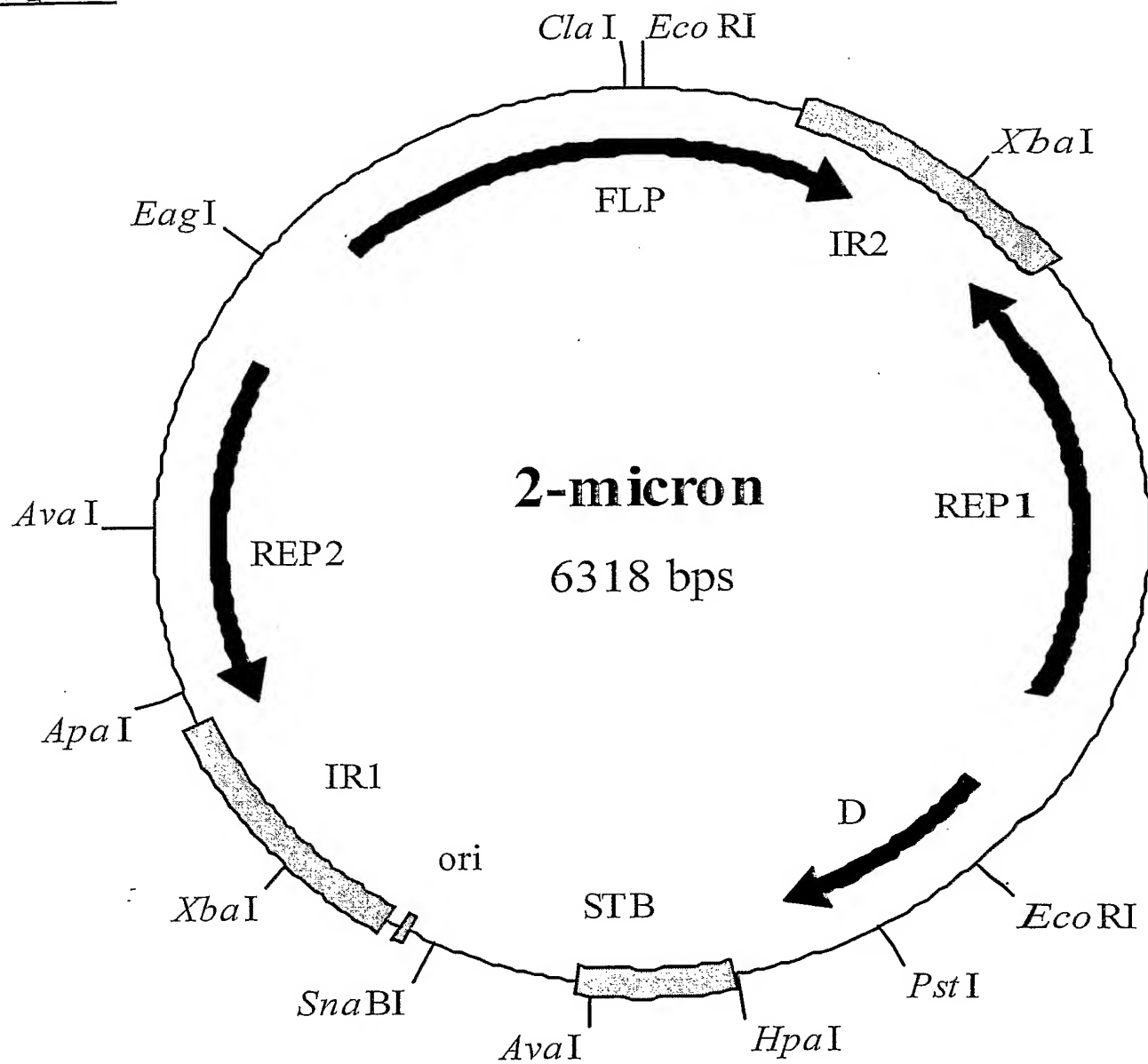


**Figure 1**

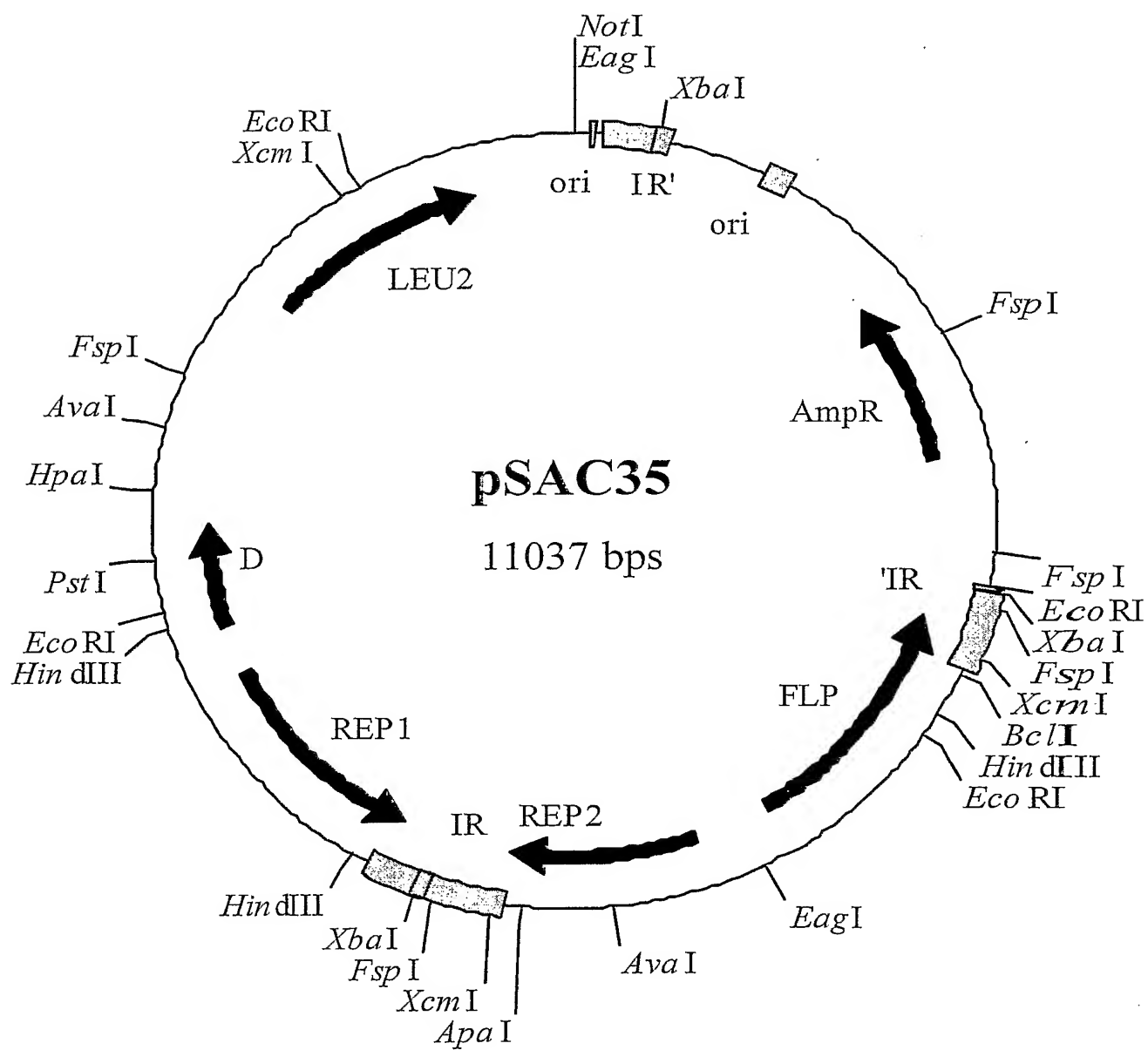
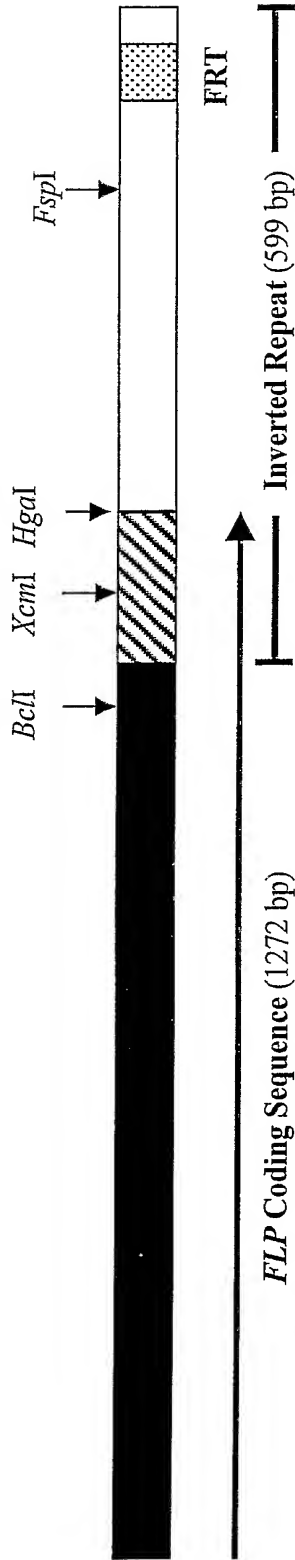
**Figure 2**

Figure 3

A) Restriction Endonuclease Sites used for DNA Insertions in *FLP* and the *FLP* Inverted Repeat

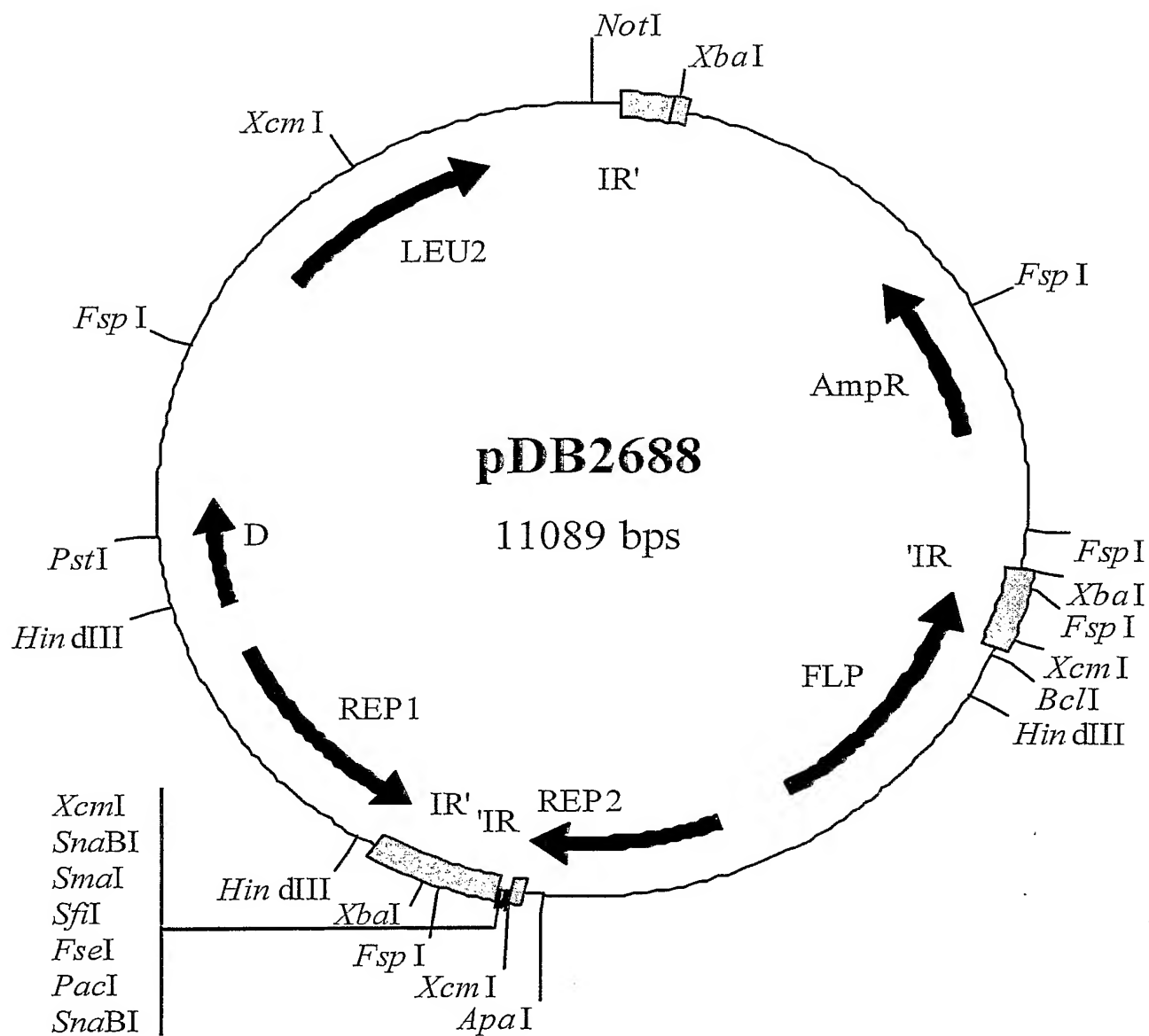


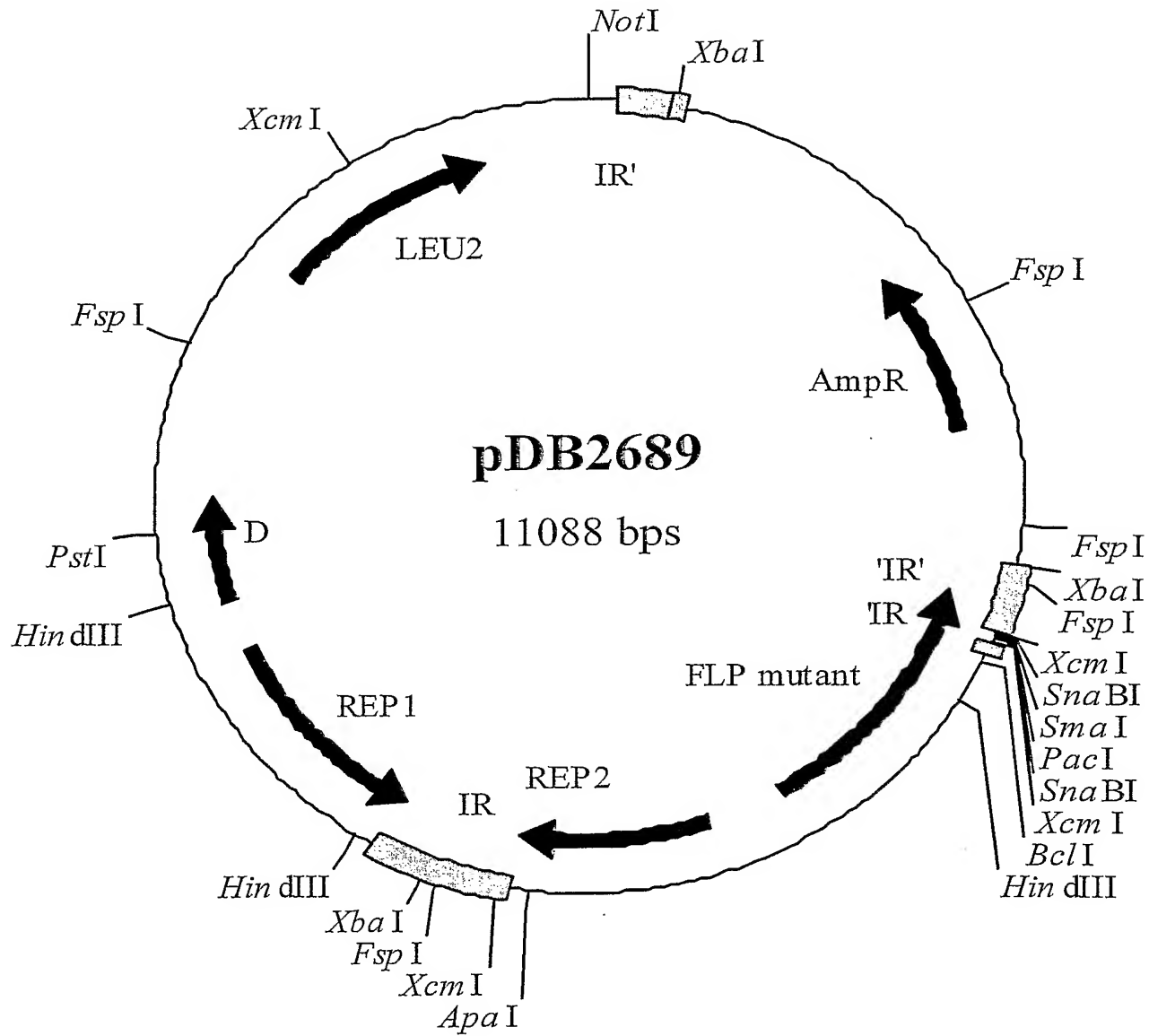
B) Flp Protein (423 amino acid residues)

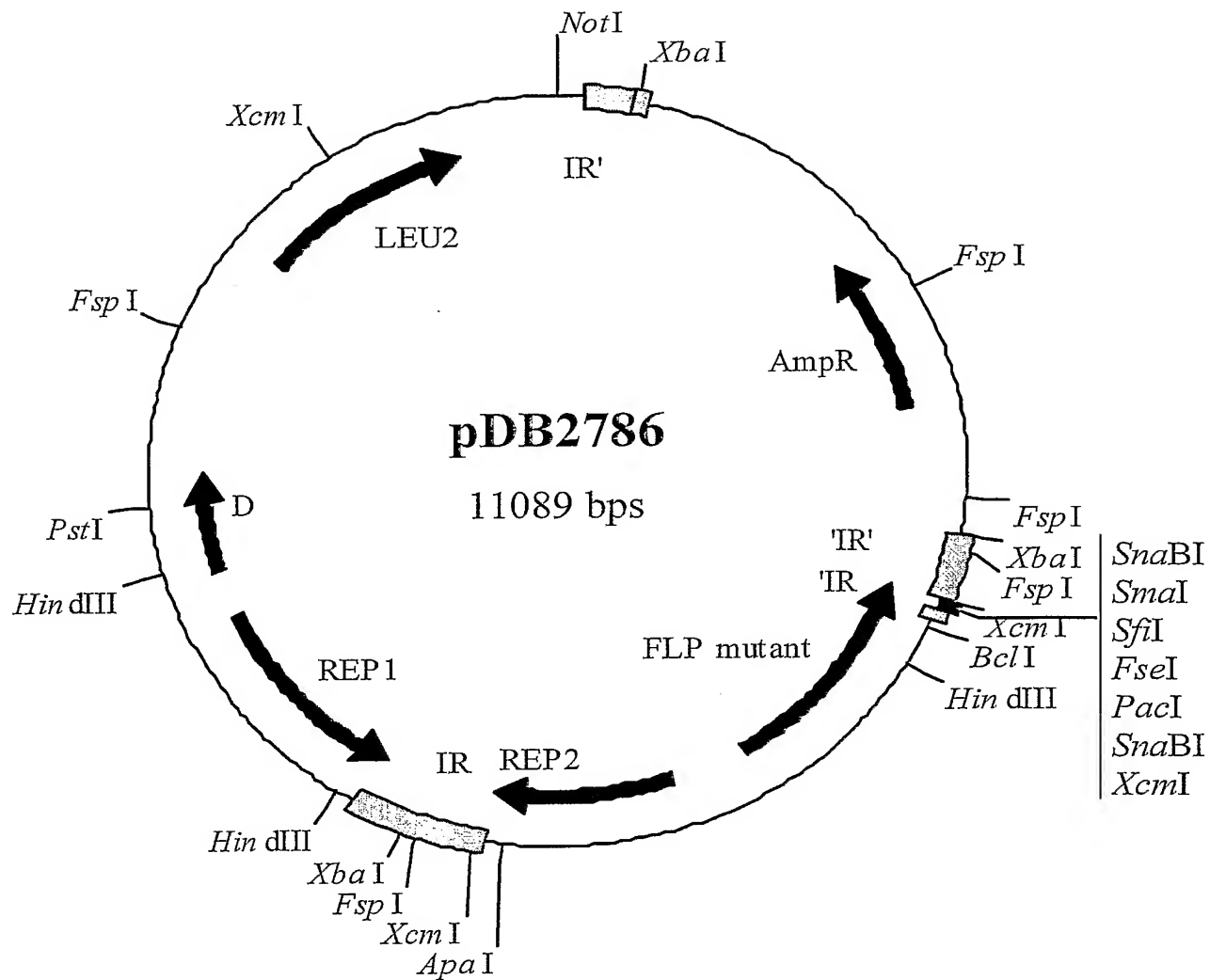


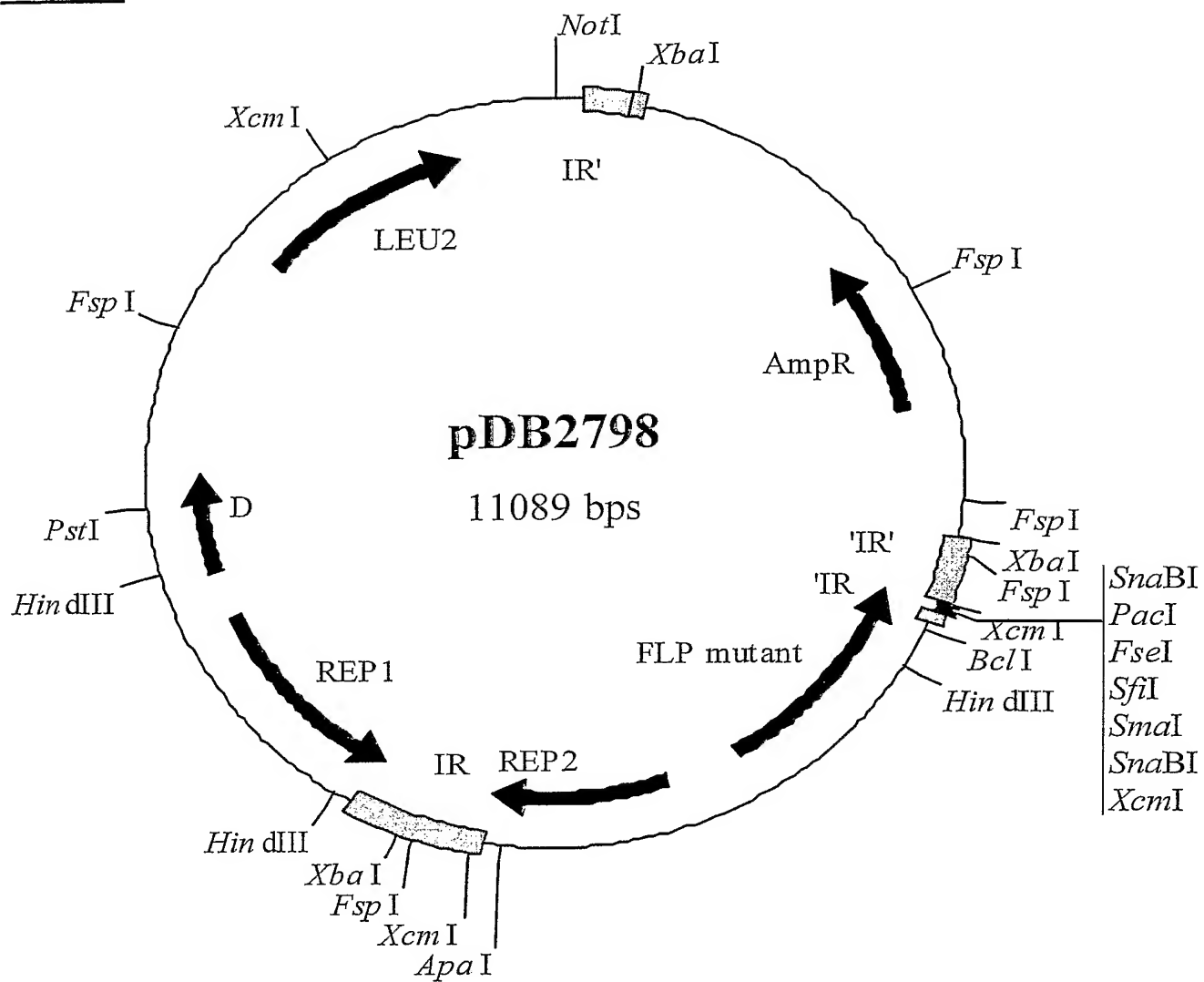
C) Truncated FLP Protein Products

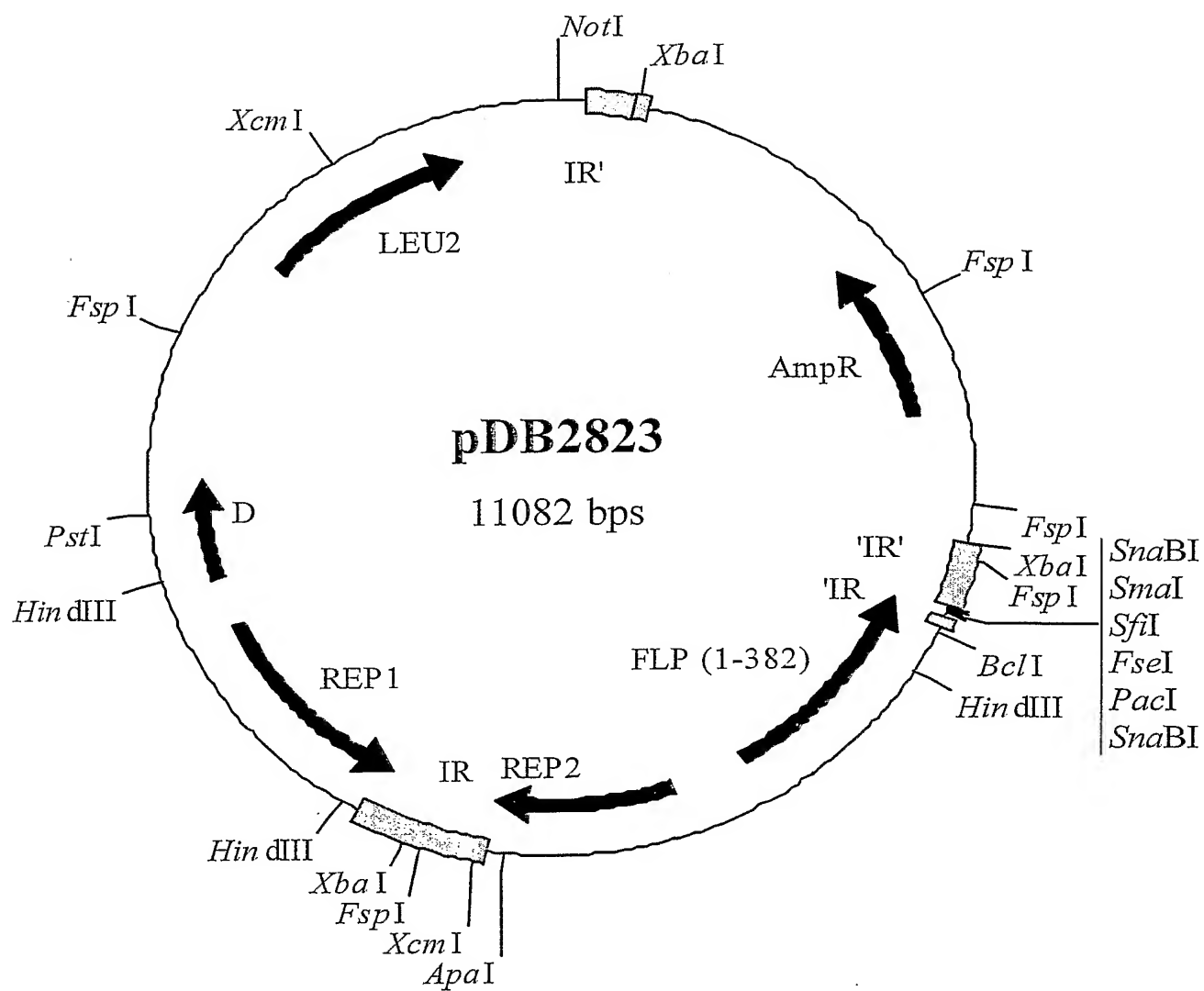


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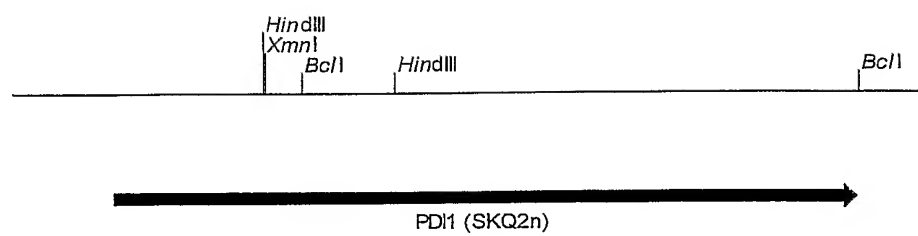
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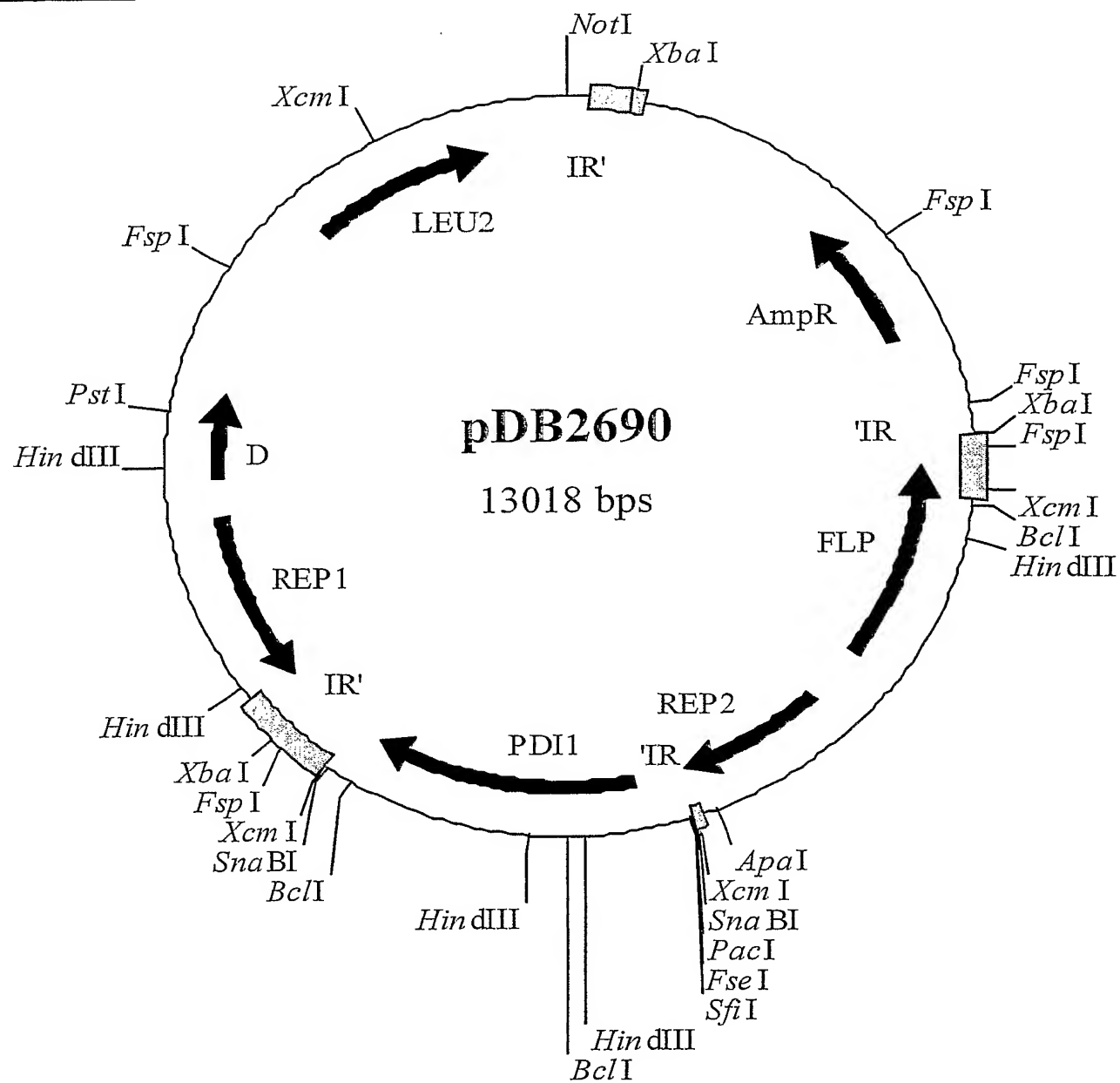
**Figure 6**

**Figure 7**

**Figure 8**

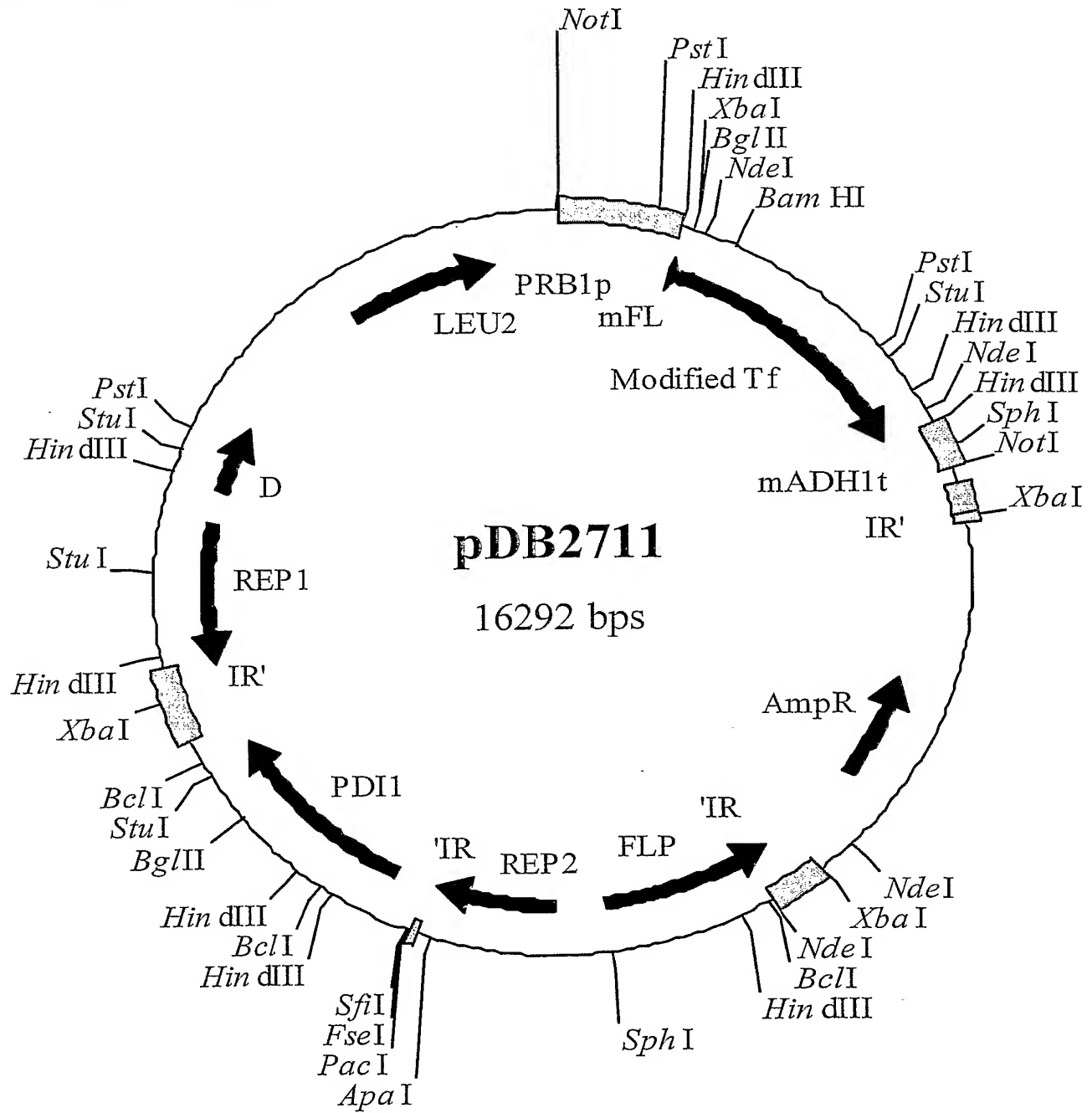


**Figure 9**

**Figure 10**

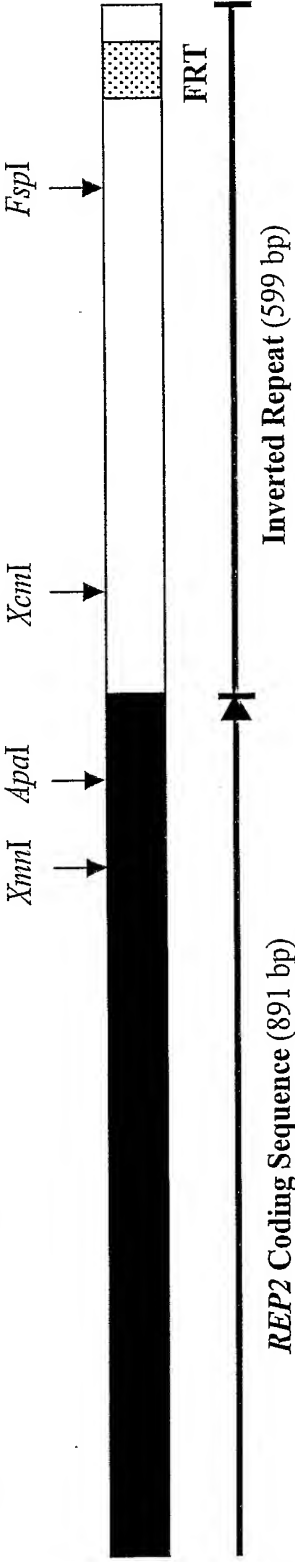
**Figure 11**

mFL = modified HSA(pre)/MF $\alpha$ 1(pro) fusion leader sequence



**Figure 12**

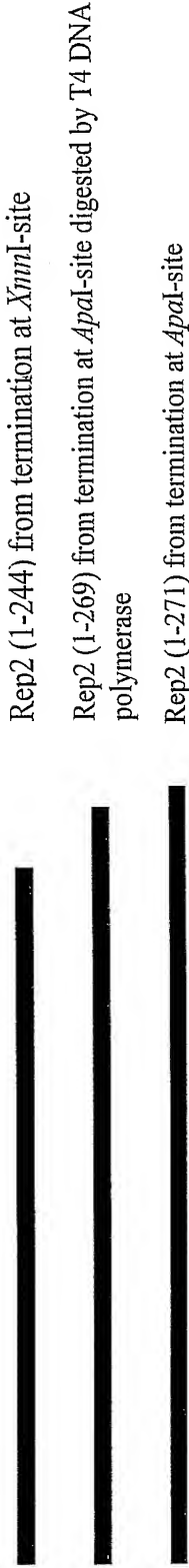
**A) Restriction Endonuclease Sites used for DNA Insertions in *REP2* and the *REP2* Inverted Repeat**



**B) Rep2 Protein (296 amino acid residues)**



**C) Truncated Rep2 Protein Products**



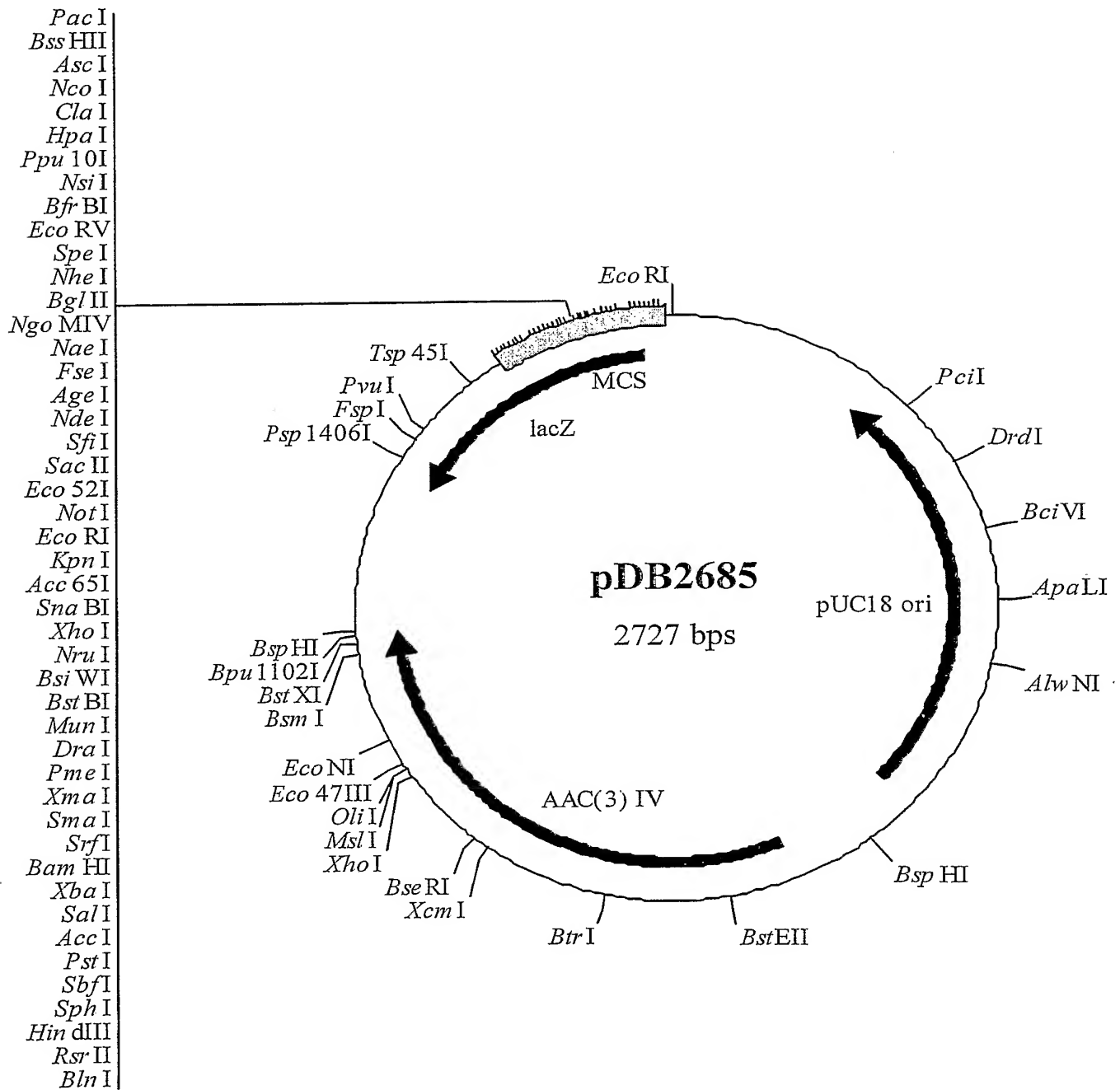
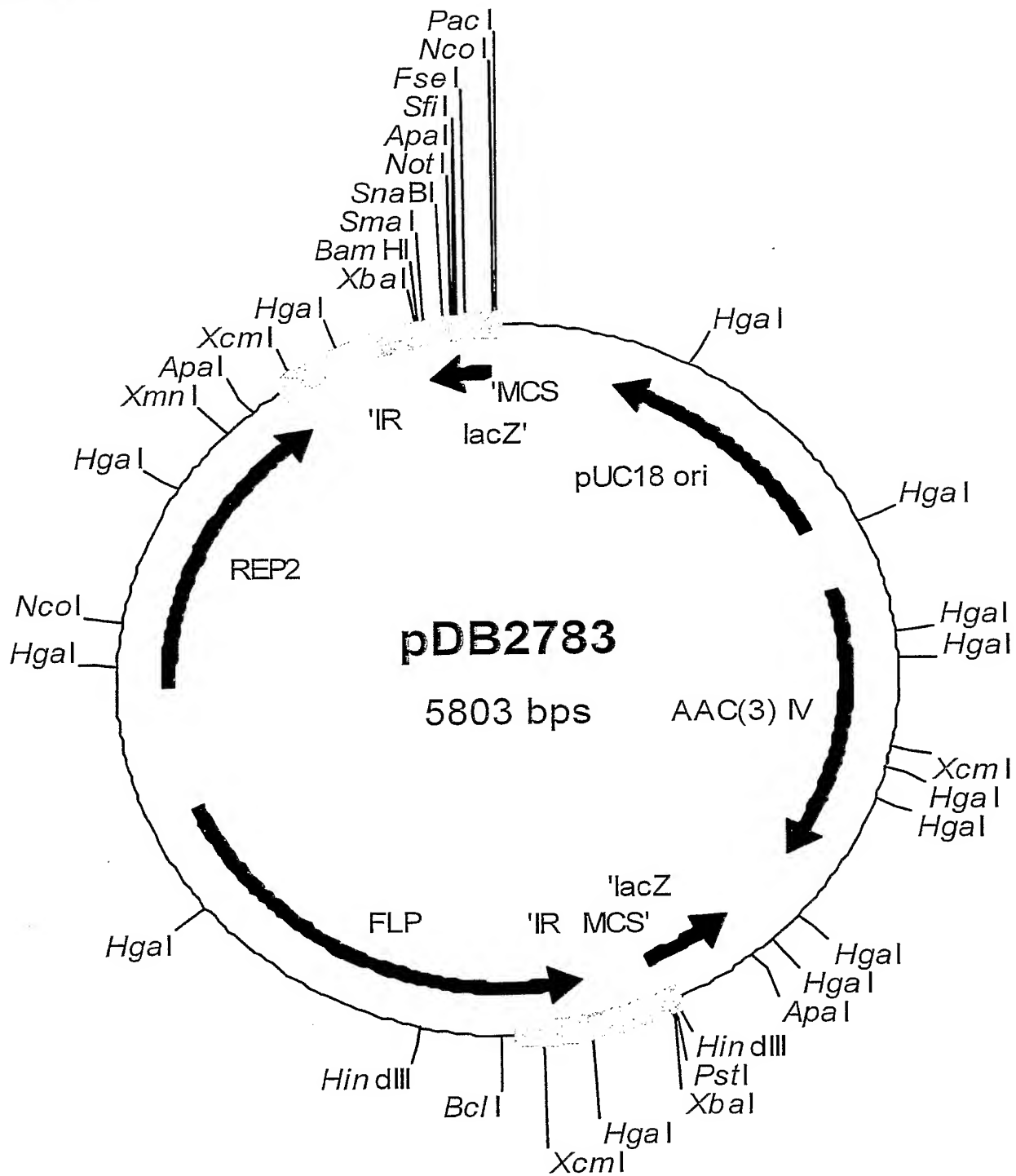
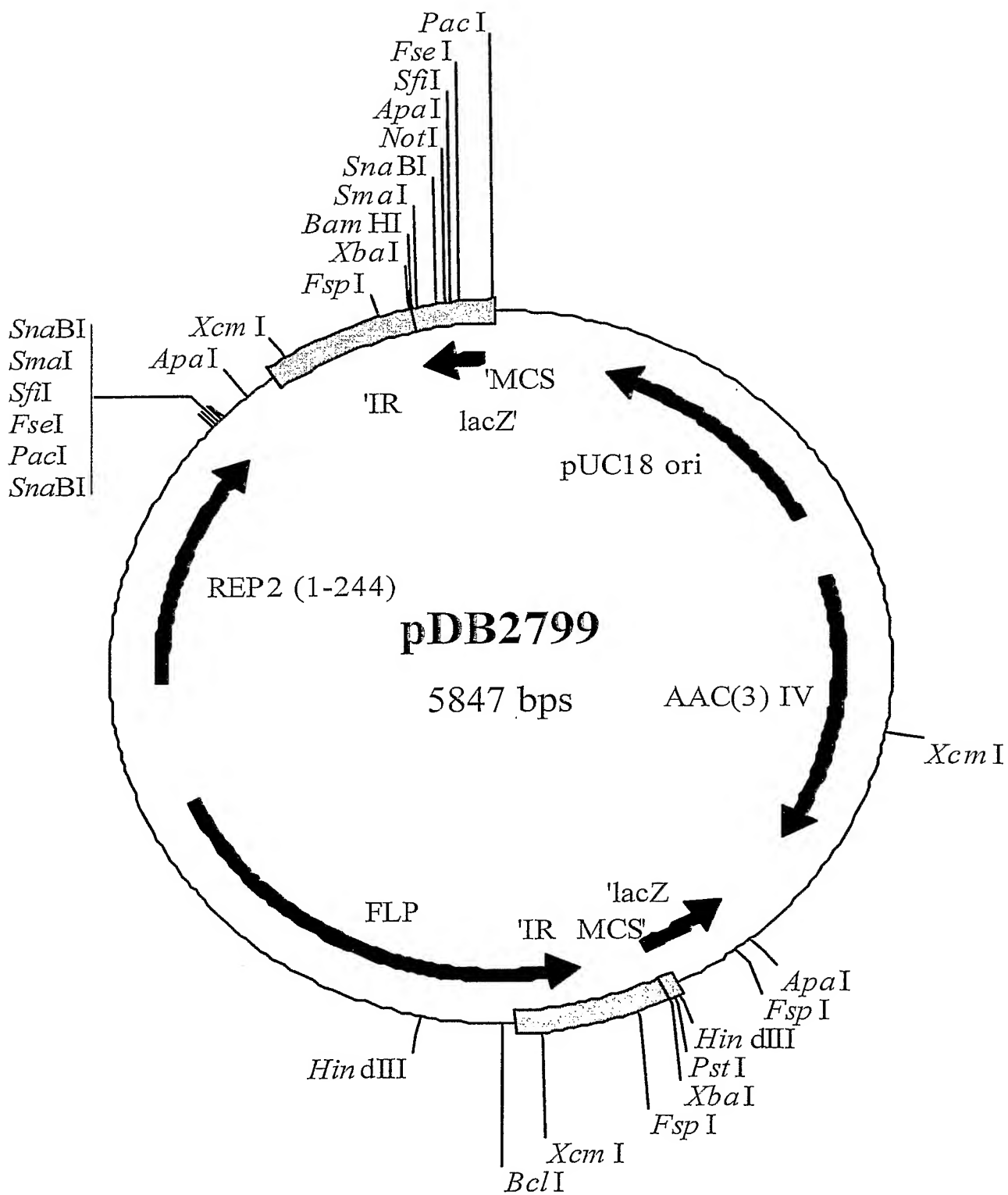
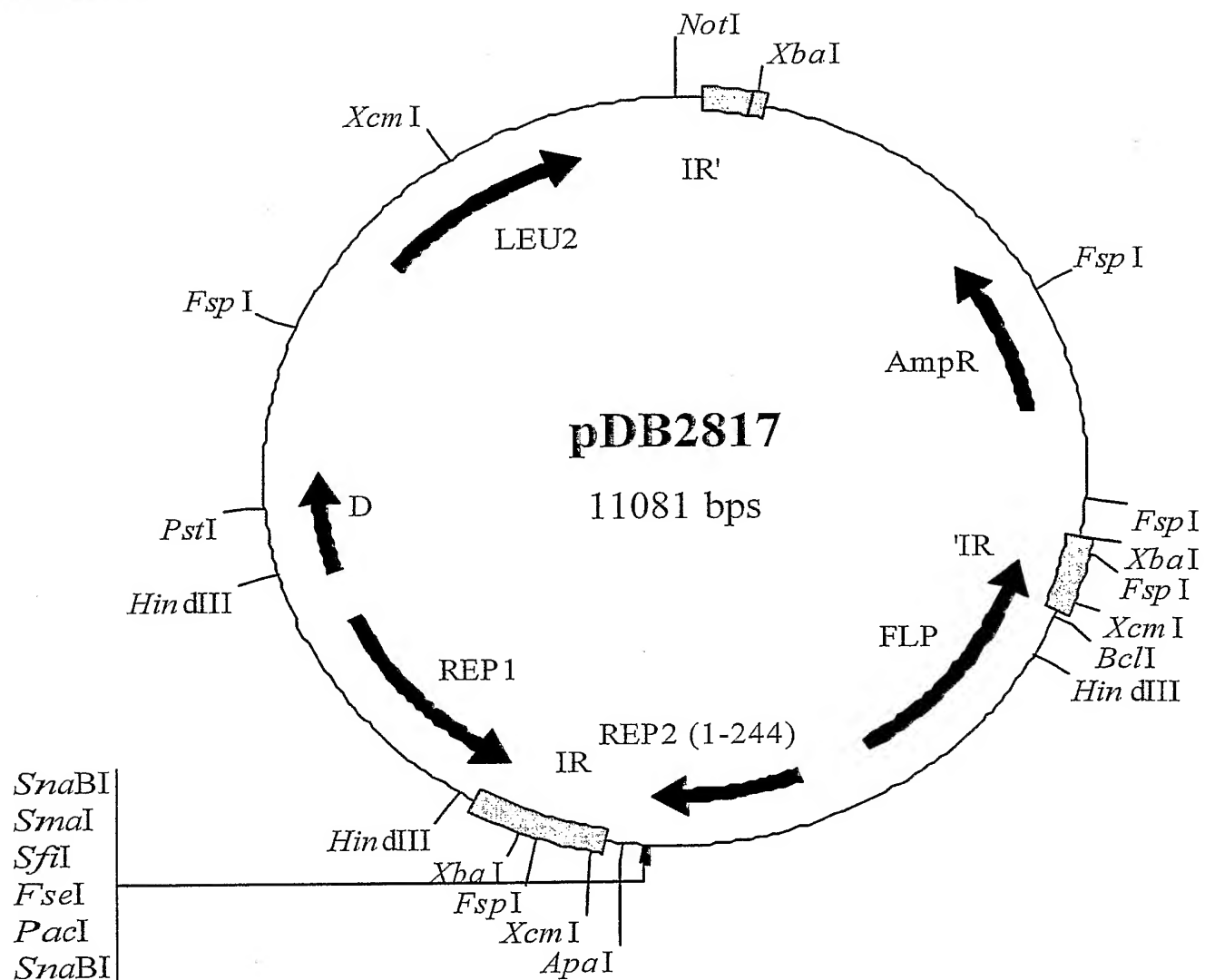
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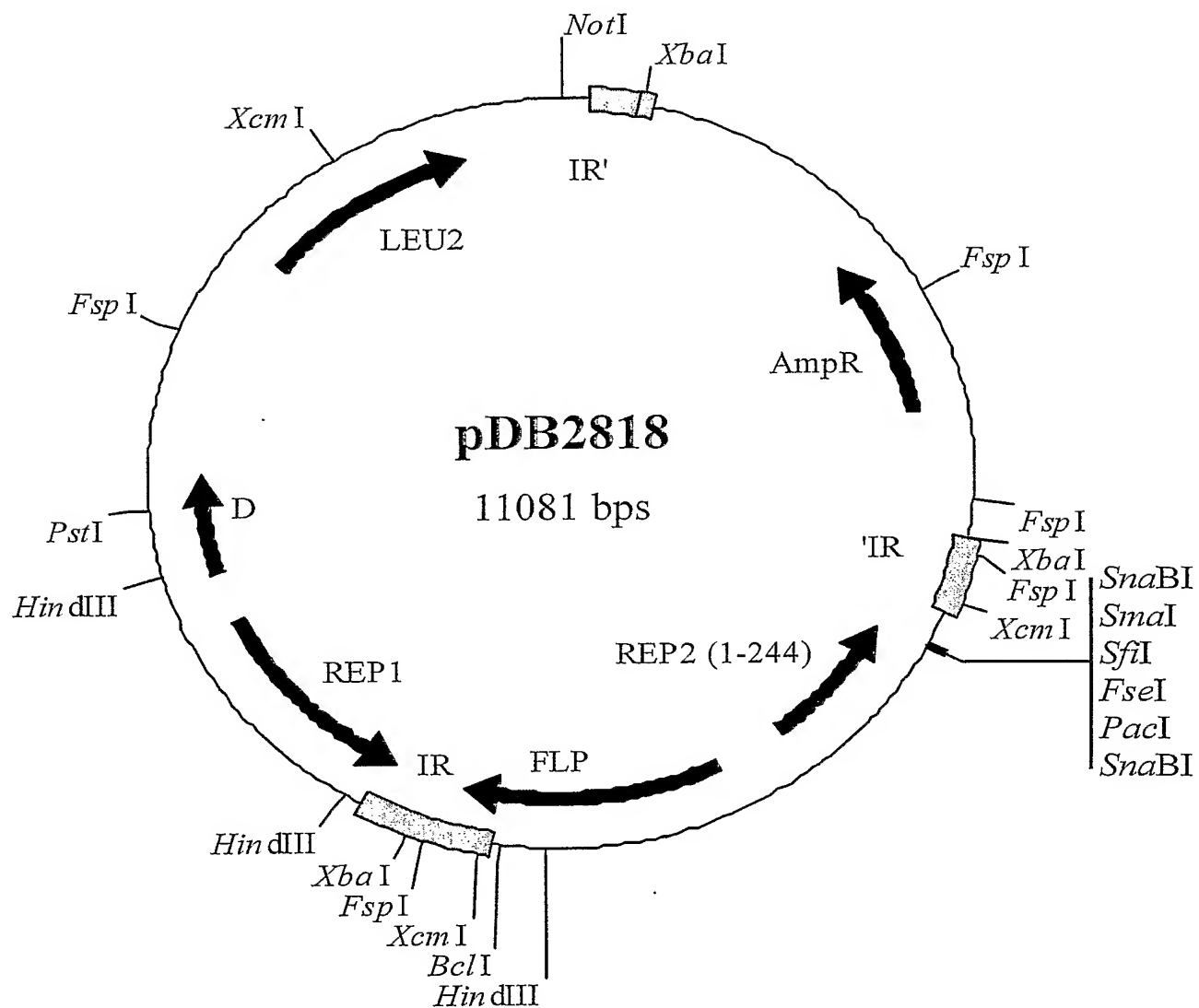
Figure 14

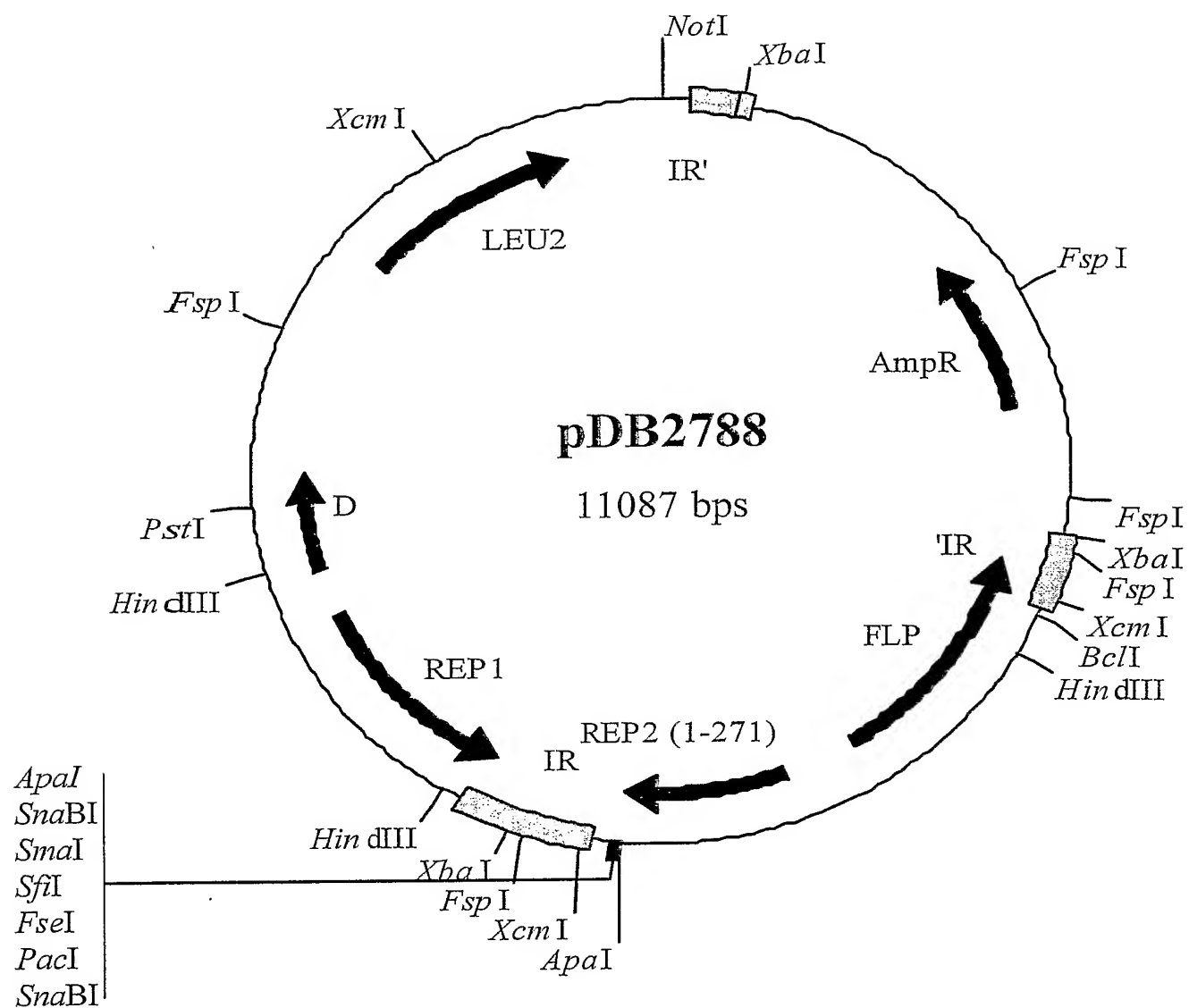


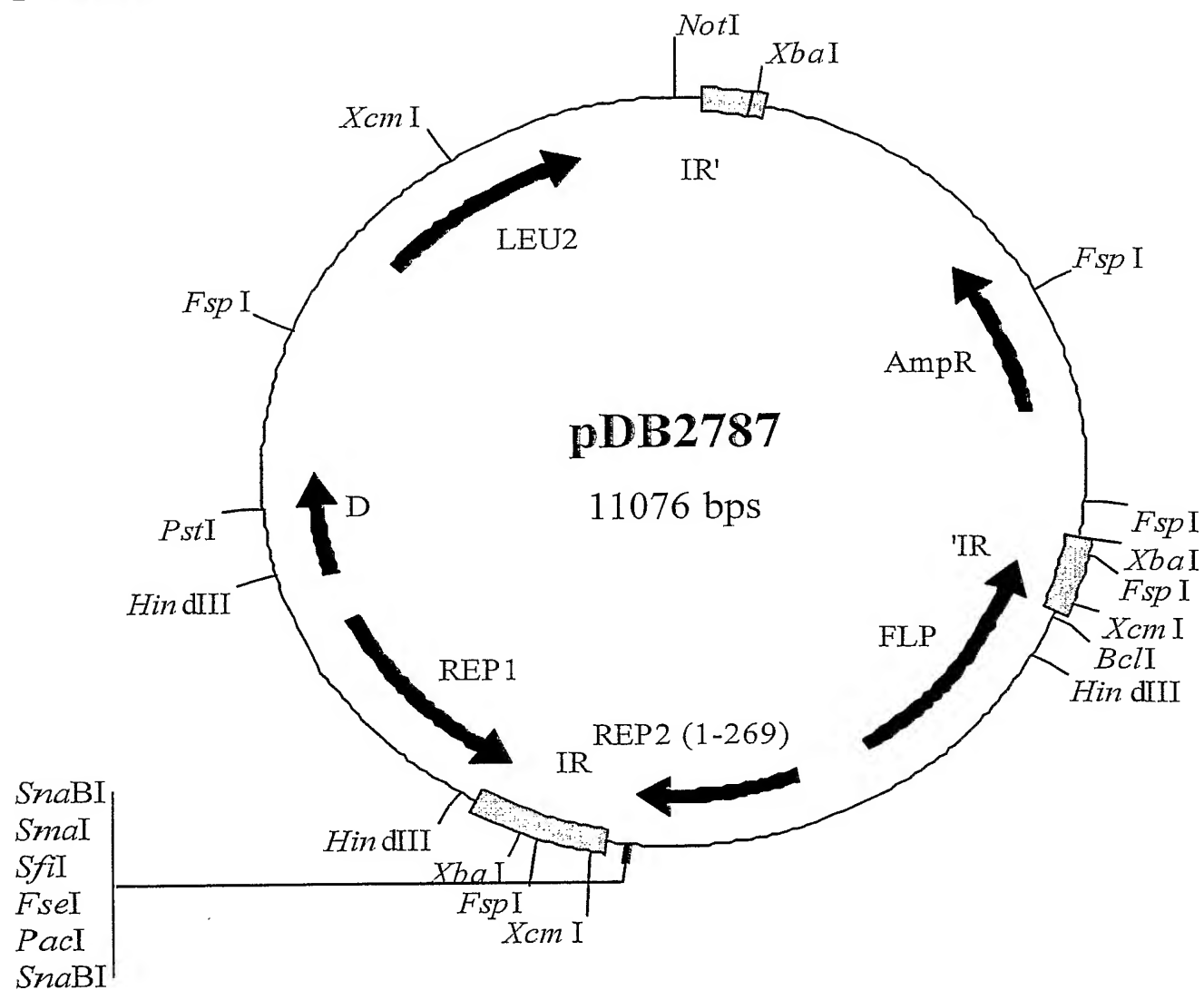
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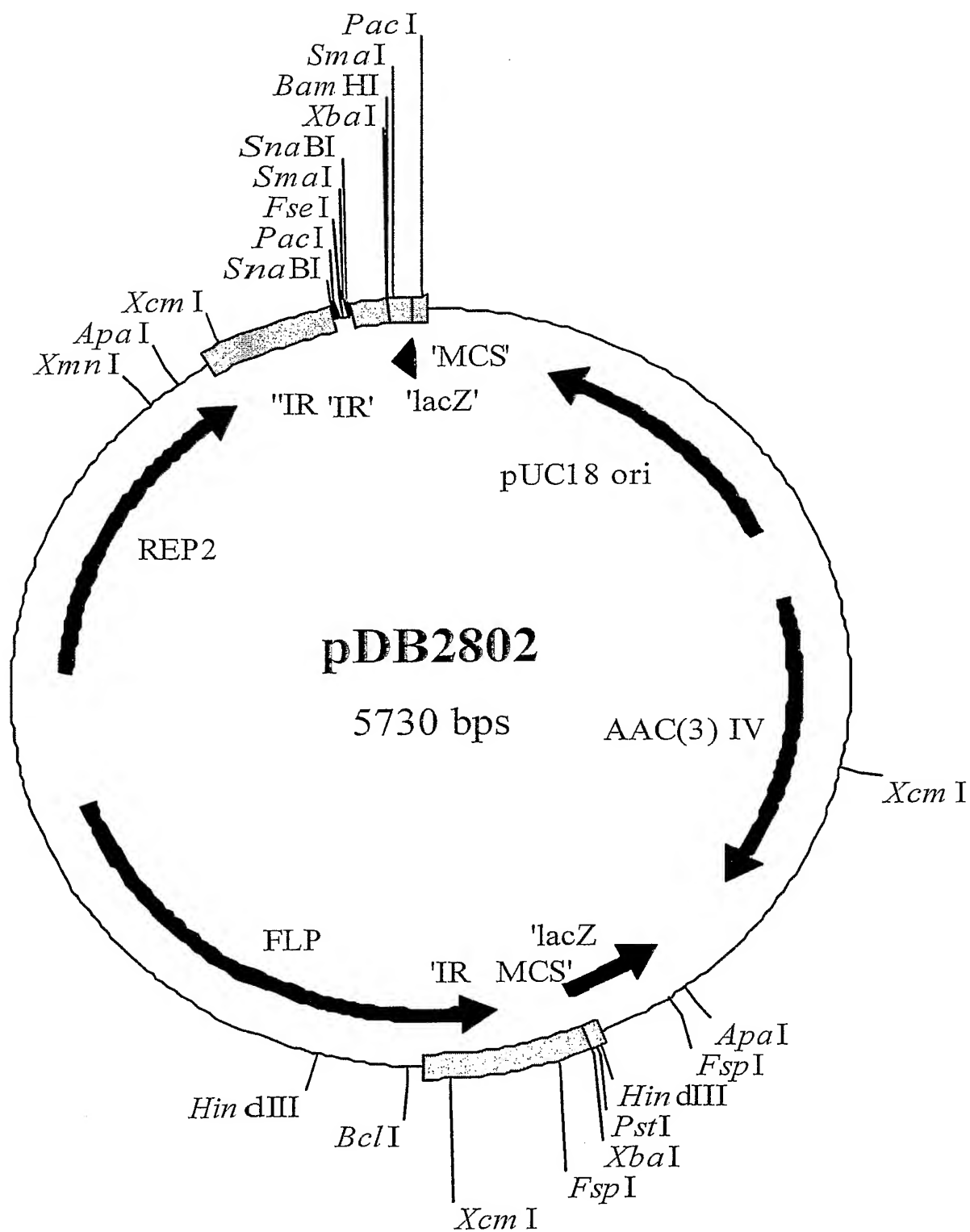
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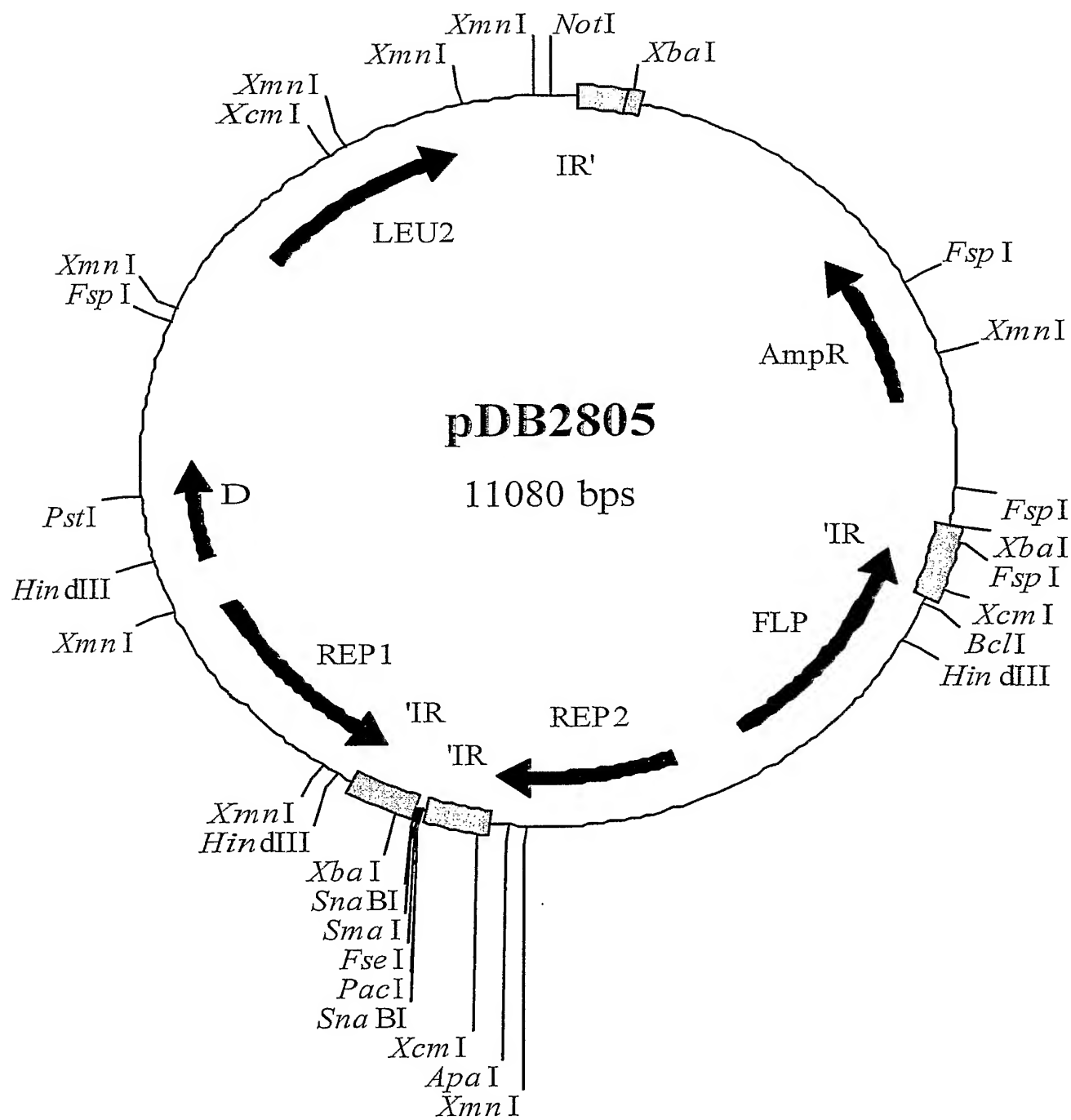


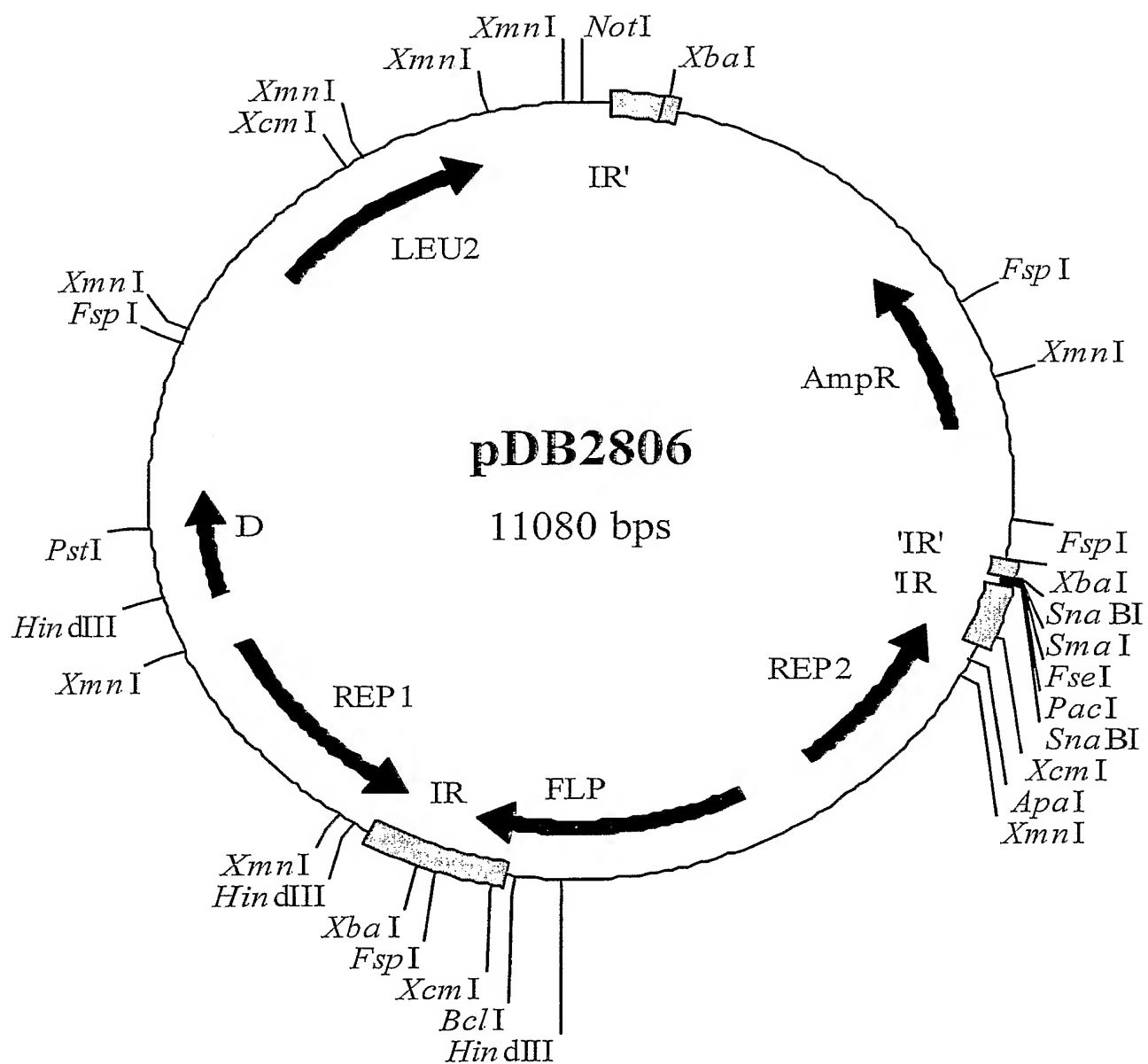
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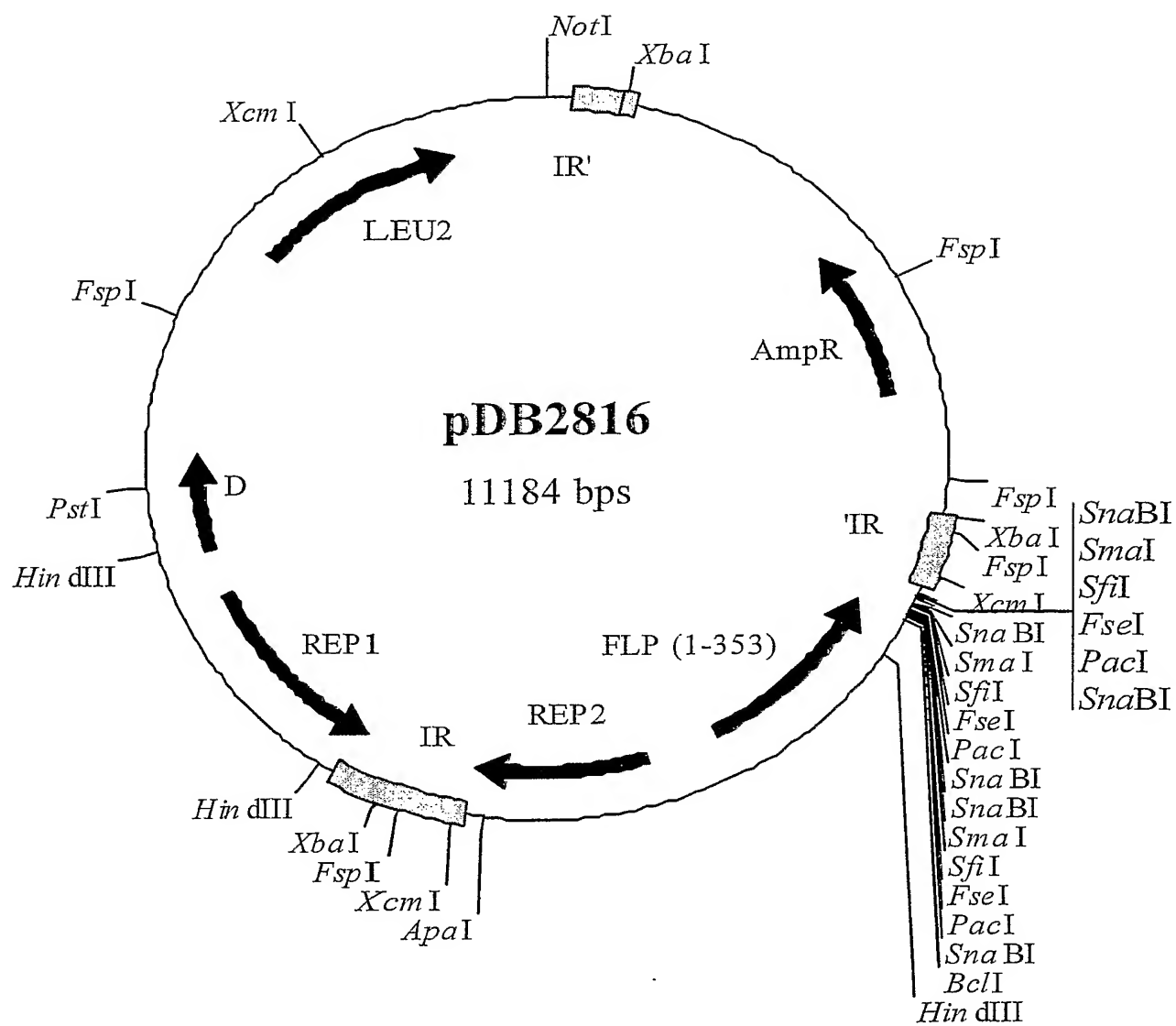
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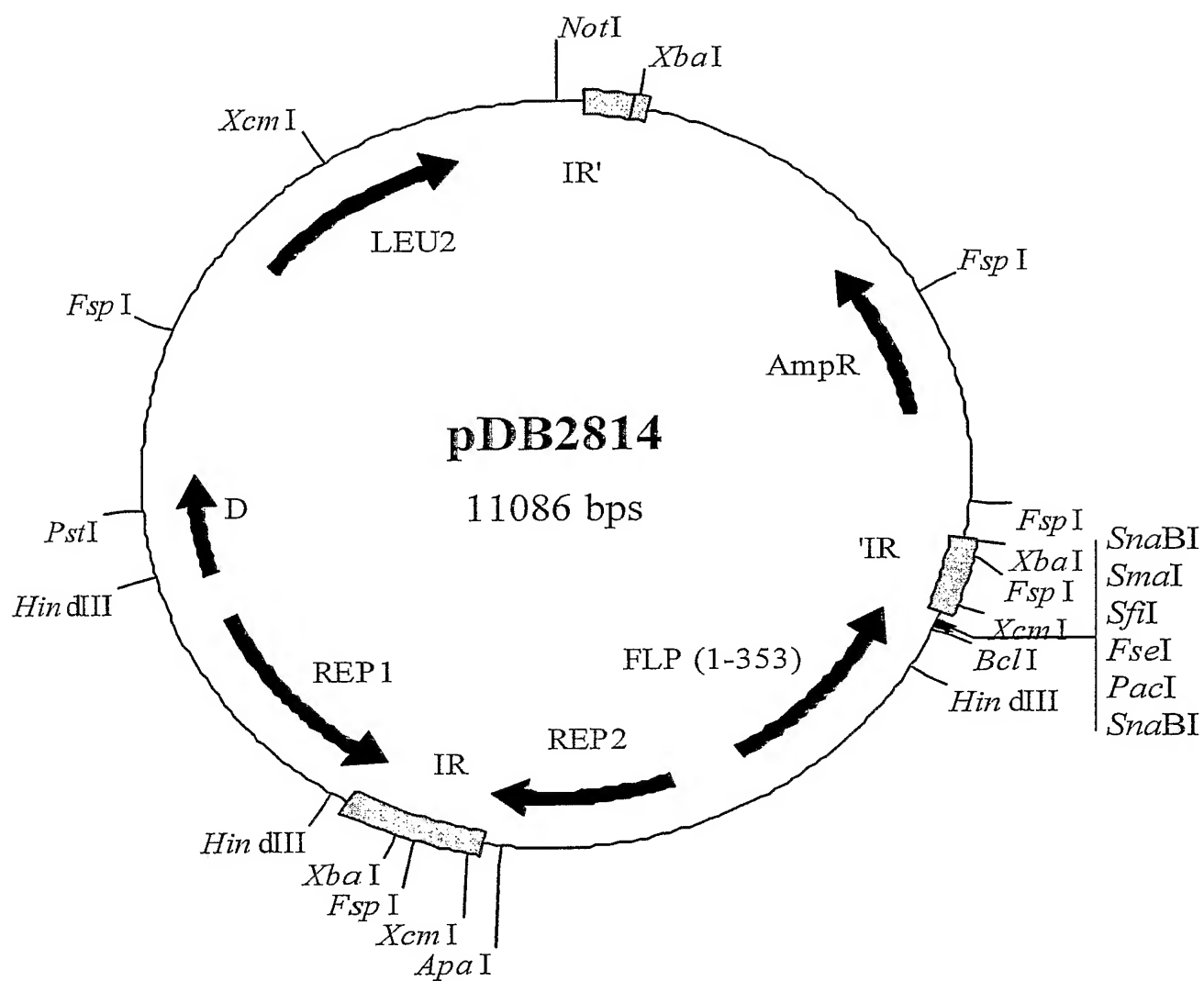
**Figure 19**

**Figure 20**

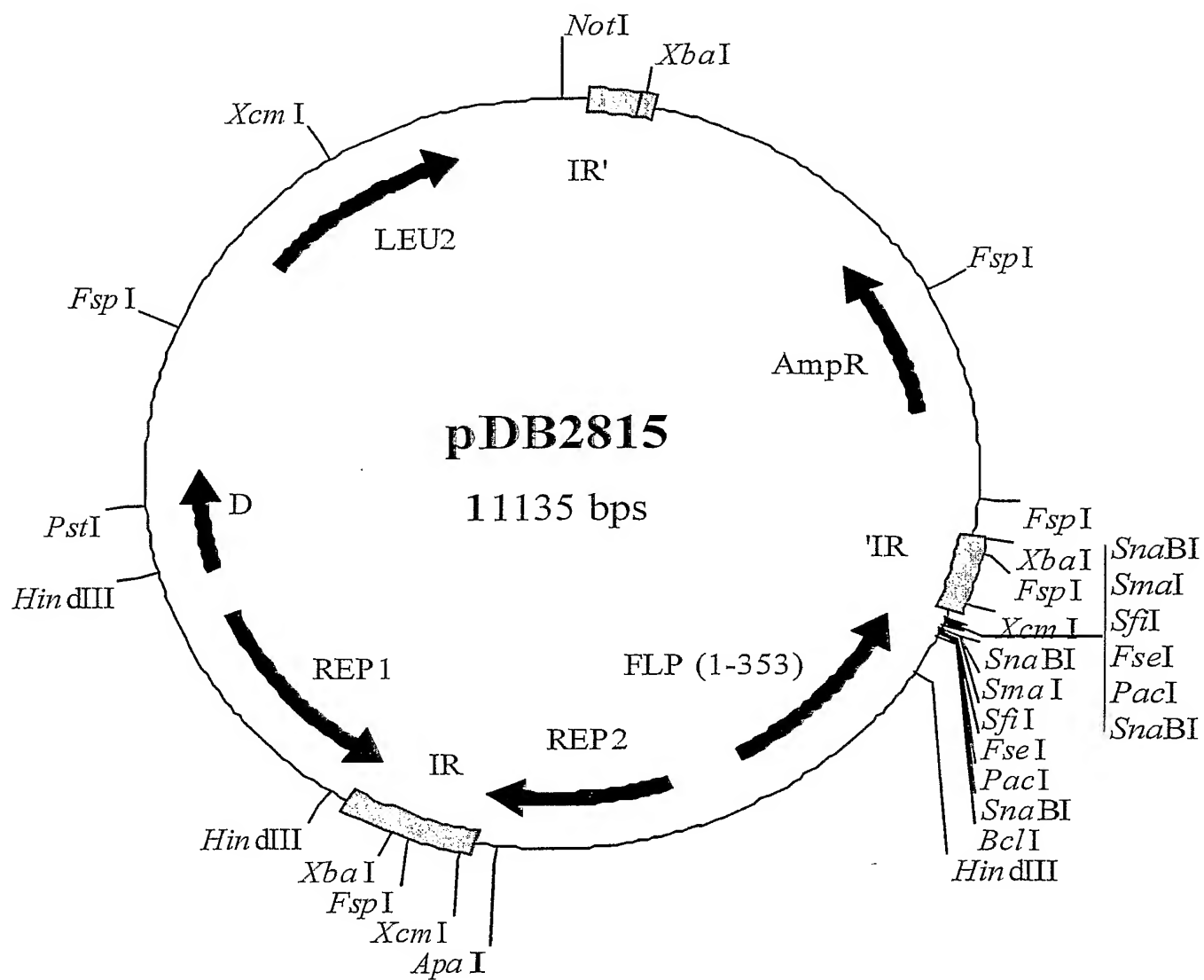
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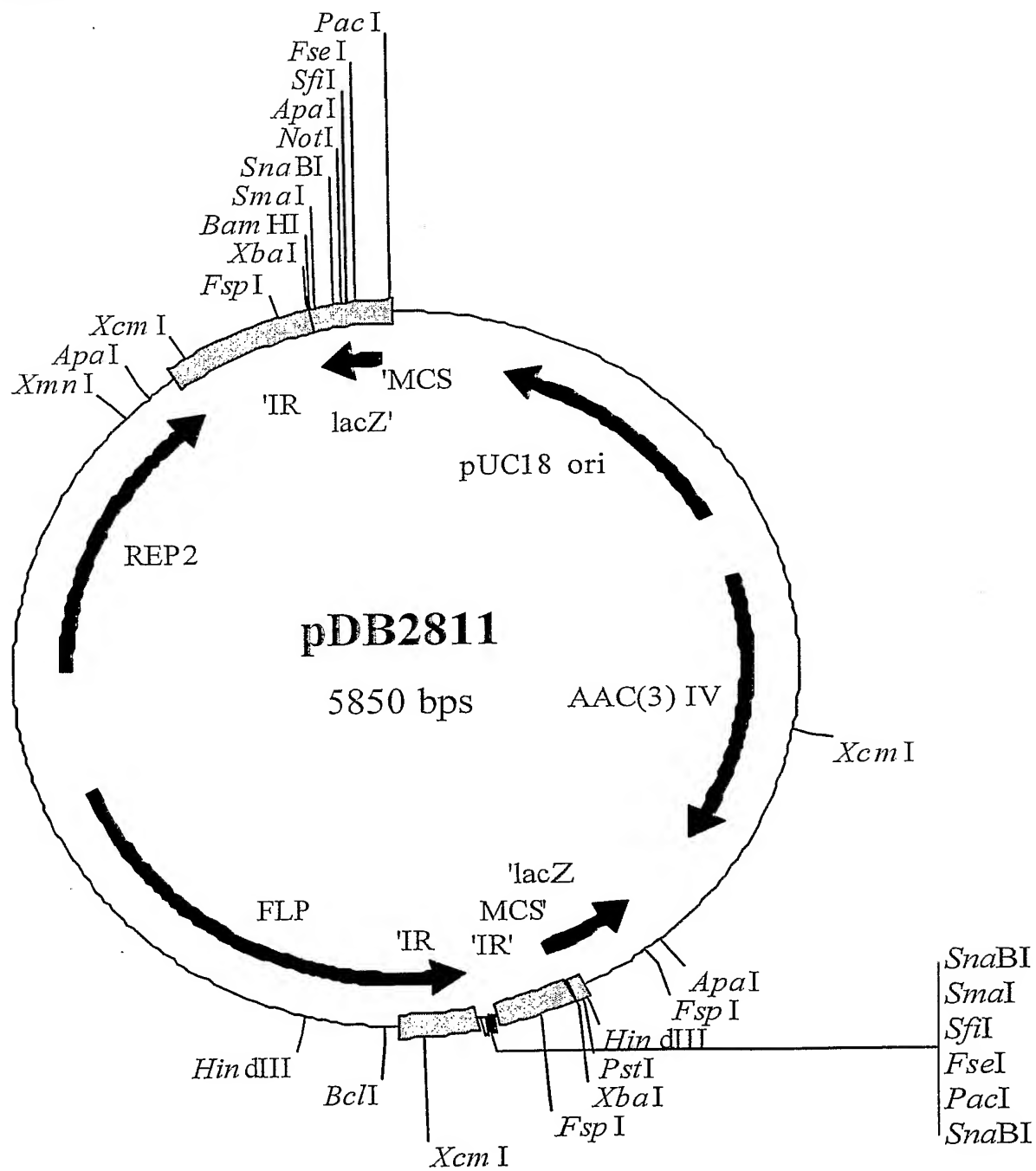
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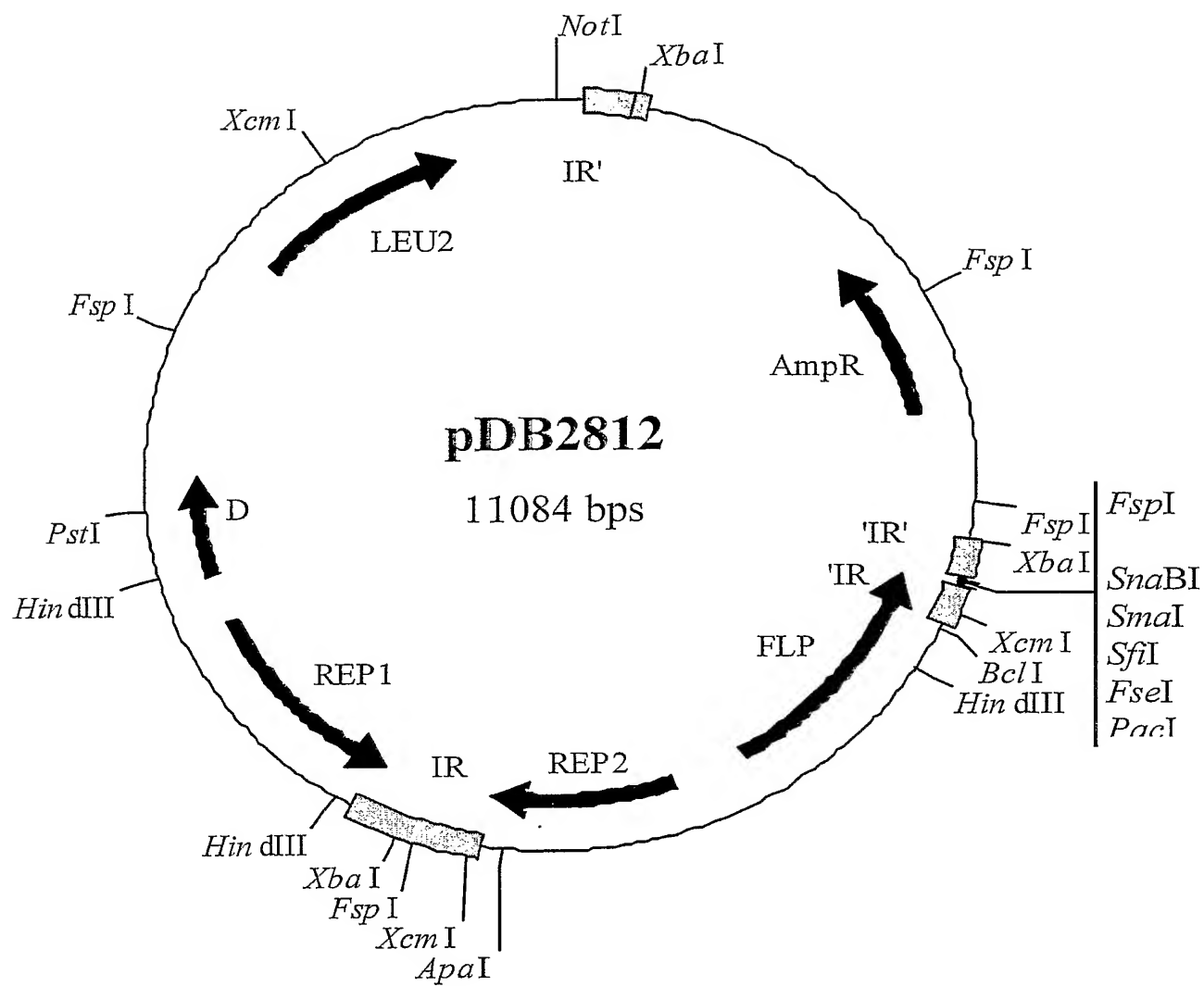
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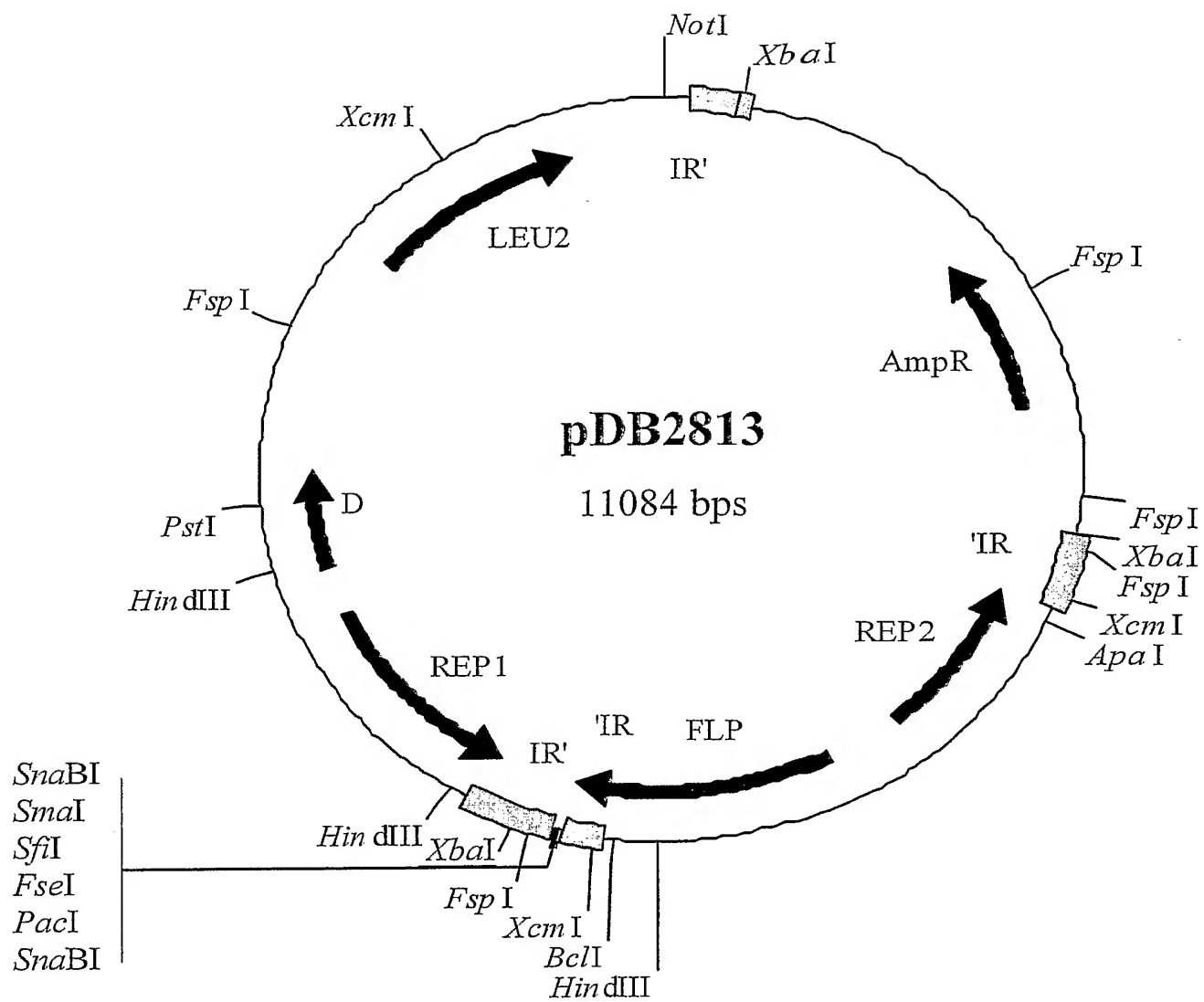
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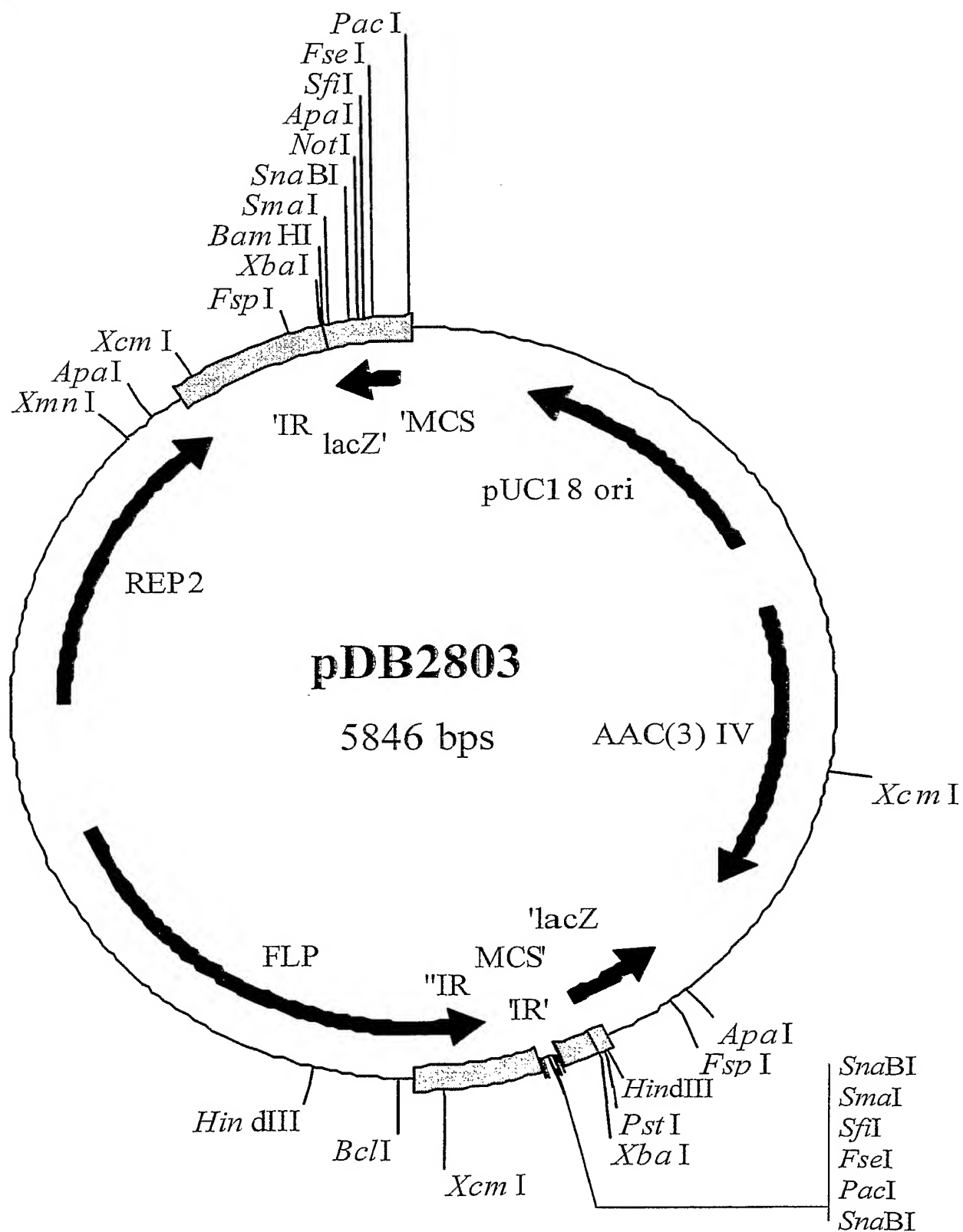


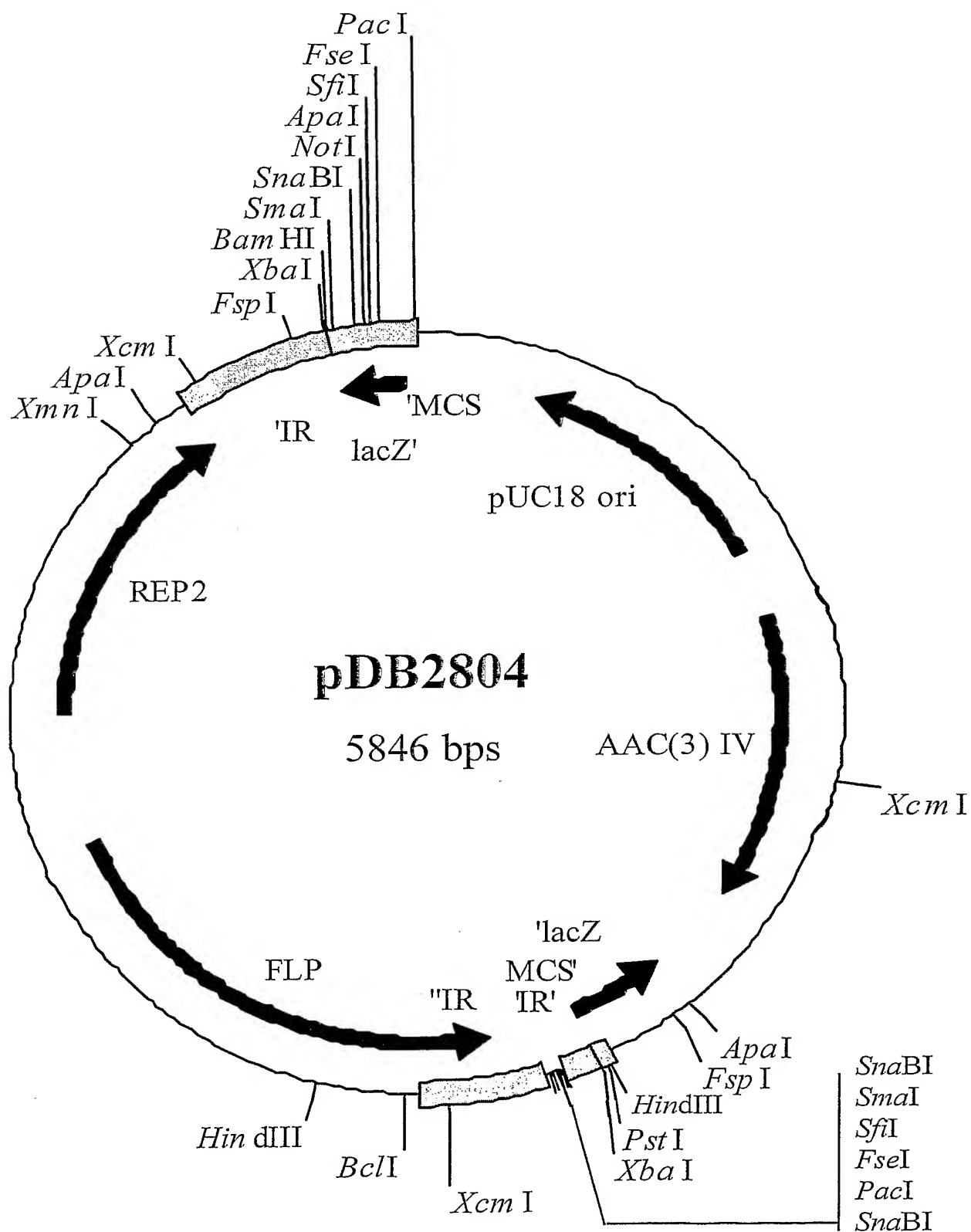
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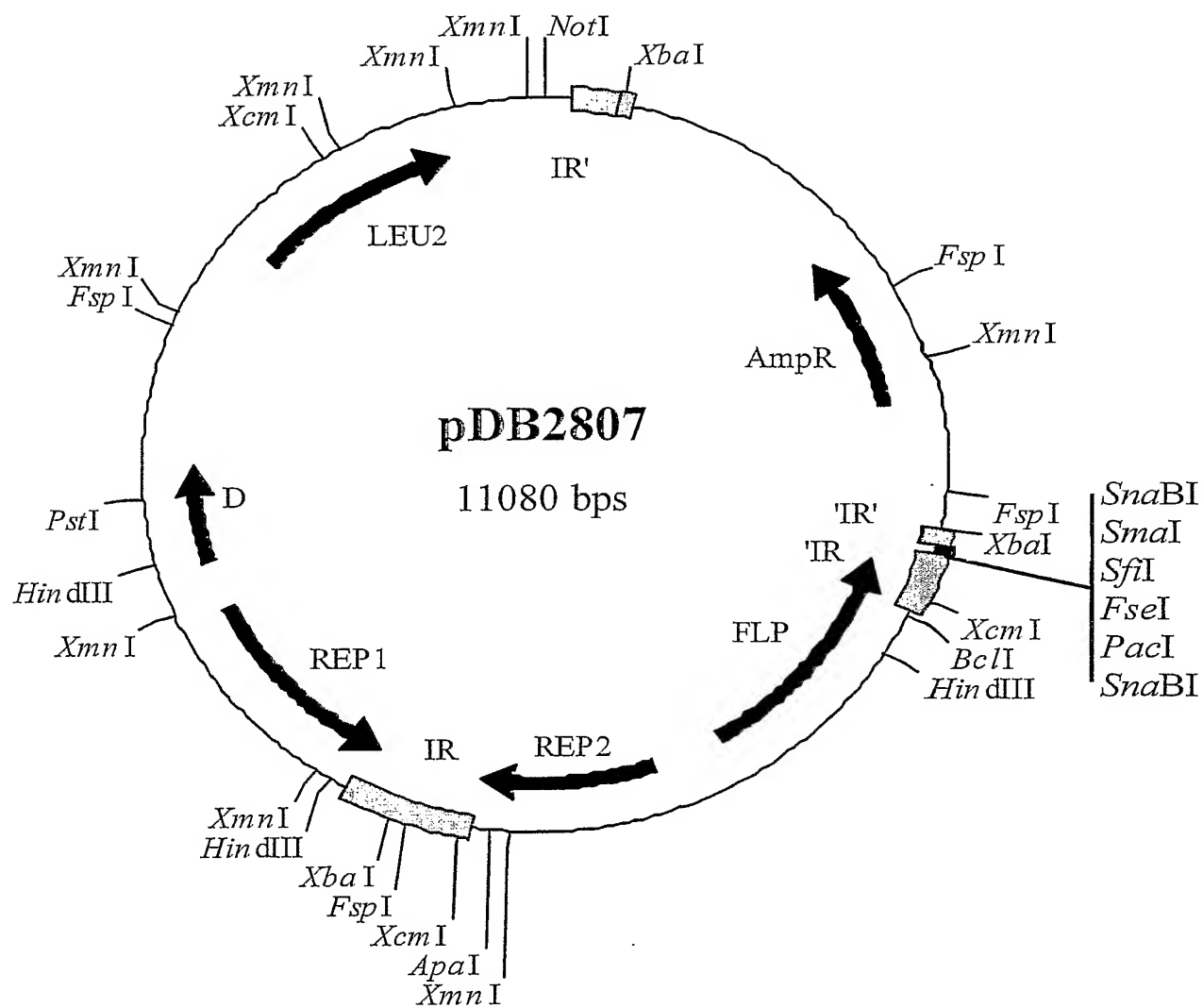
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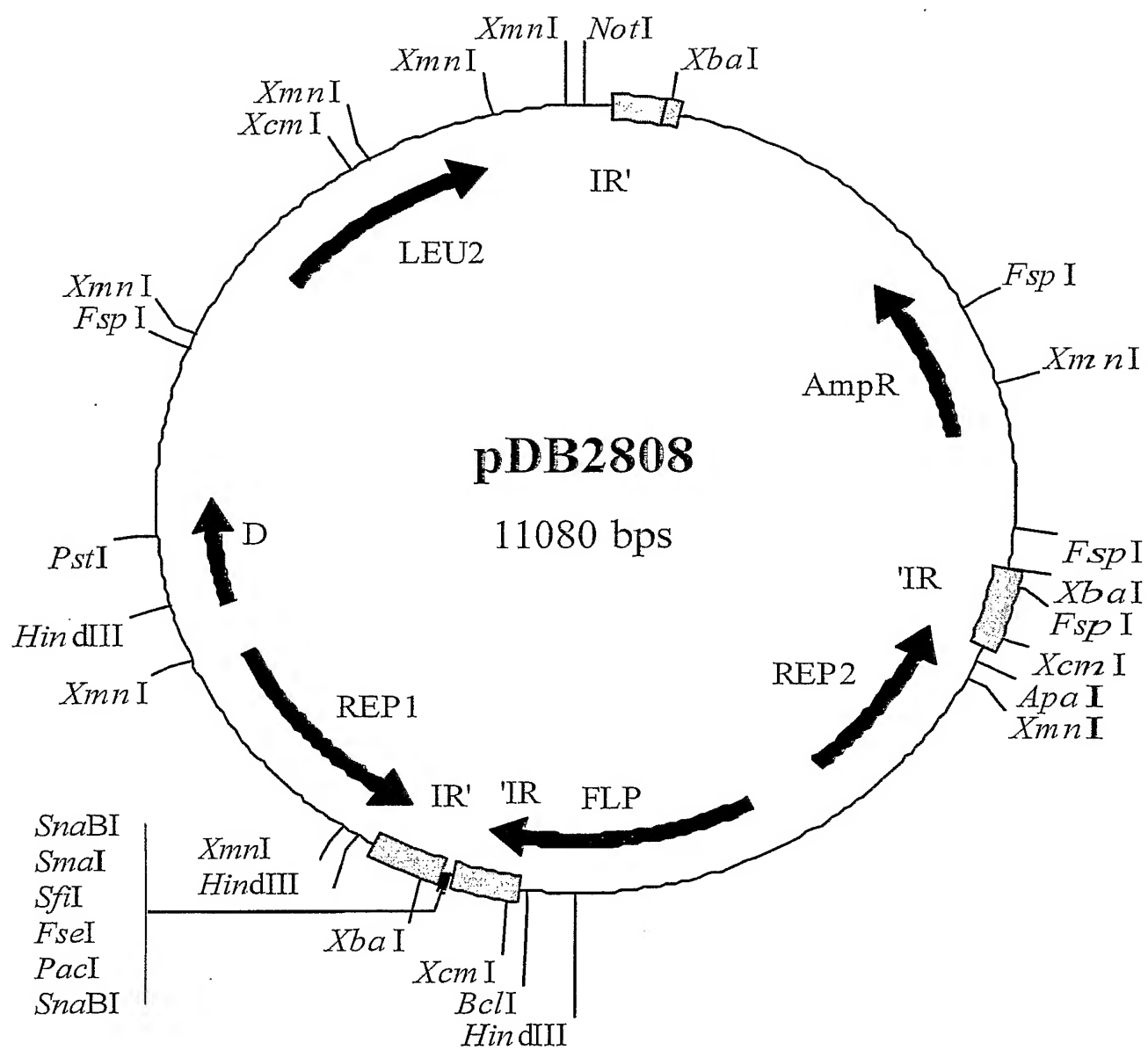
**Figure 27**

**Figure 28**

**Figure 29**

**Figure 30**

**Figure 31**

**Figure 32**



**Figure 33A****Table 3 (part 1)**

Plasmid	Insertion Site	Insertion Site Details	2 $\mu$ m Form	Initial OD <sub>600</sub>	Leucine Prototrophs		
					Number	%	Average
pSAC35	-	-	B	0.074	100/100	100%	99%
pSAC35	-	-	B	0.068	95/98	97%	
pDB2818	<i>Xmn</i> I	REP2 (1-244)	A	0.062	32/100	32%	42%
pDB2818	<i>Xmn</i> I	REP2 (1-244)	A	0.059	52/100	52%	
pDB2787	<i>Apa</i> I/T4 pol.	REP2 (1-269)	B	0.054	34/100	34%	45%
pDB2787	<i>Apa</i> I/T4 pol.	REP2 (1-269)	B	0.084	45/100	45%	
pDB2788	<i>Apa</i> I	REP2 (1-271)	B	0.066	23/100	23%	33%
pDB2788	<i>Apa</i> I	REP2 (1-271)	B	0.051	43/100	43%	

**Figure 33B****Table 3 (part 2)**

Plasmid	Insertion Site	Insertion Site Details	2µm Form	Initial OD <sub>600</sub>	Leucine Prototrophs		
					Number	%	Average
pDB2688	<i>XcmI</i>	Inverted Repeat	B	0.055	100/100	100%	100%
pDB2688	<i>XcmI</i>	Inverted Repeat	B	0.066	100/100	100%	
pDB2806	<i>FspI</i>	Inverted Repeat	A	0.073	100/100	100%	100%
pDB2806	<i>FspI</i>	Inverted Repeat	A	0.070	100/100	100%	
pDB2817	<i>XmnI</i>	REP2 (1-244)	B	0.063	36/100	36%	35%
pDB2817	<i>XmnI</i>	REP2 (1-244)	B	0.082	34/100	34%	
pDB2805	<i>FspI</i>	Inverted Repeat	B	0.069	100/100	100%	100%
pDB2805	<i>FspI</i>	Inverted Repeat	B	0.078	100/100	100%	
pDB2814	<i>BclI</i>	FLP (1-353), 1× Insert	B	0.080	69/100	69%	67%
pDB2814	<i>BclI</i>	FLP (1-353), 1× Insert	B	0.057	64/100	64%	
pDB2815	<i>BclI</i>	FLP (1-353), 2× Insert	B	0.067	70/100	70%	67%
pDB2815	<i>BclI</i>	FLP (1-353), 2× Insert	B	0.068	64/100	64%	

**Figure 33C****Table 3 (part 3)**

Plasmid	Insertion Site	Insertion Site Details	2 $\mu$ m Form	Initial OD <sub>600</sub>	Leucine Prototrophs		
					Number	%	Average
pDB2816	<i>Bcl</i> I	FLP (1-353), 3 $\times$ Insert	B	0.069	67/100	67%	74%
pDB2816	<i>Bcl</i> I	FLP (1-353), 3 $\times$ Insert	B	0.056	81/100	81%	
pDB2689	<i>Xcm</i> I	C-terminal FLP Mutant (FLP 1-384, plus 56 other residues)	B	0.054	73/100	73%	75%
pDB2689	<i>Xcm</i> I	C-terminal FLP Mutant (FLP 1-384, plus 56 other residues)	B	0.056	77/100	77%	
pDB2786	<i>Xcm</i> I	C-terminal FLP Mutant (FLP 1-384, plus 14 other residues)	B	0.079	73/100	73%	67%
pDB2786	<i>Xcm</i> I	C-terminal FLP Mutant (FLP 1-384, plus 14 other residues)	B	0.052	61/100	61%	
pDB2823	<i>Xcm</i> I	FLP (1-382)	B	0.071	70/100	70%	64%
pDB2823	<i>Xcm</i> I	FLP (1-382)	B	0.055	57/100	57%	

**Figure 33D****Table 3 (part 4)**

Plasmid	Insertion Site	Insertion Site Details	2 $\mu$ m Form	Initial OD <sub>600</sub>	Leucine Prototrophs		
					Number	%	Average
pDB2813	<i>Hgal</i>	Inverted Repeat	A	0.057	100/100	100%	100%
pDB2813	<i>Hgal</i>	Inverted Repeat	A	0.076	100/100	100%	
pDB2808	<i>FspI</i>	Inverted Repeat	A	0.058	100/100	100%	100%
pDB2808	<i>FspI</i>	Inverted Repeat	A	0.060	100/100	100%	
pDB2812	<i>Hgal</i>	Inverted Repeat	B	0.062	100/100	100%	100%
pDB2812	<i>Hgal</i>	Inverted Repeat	B	0.071	100/100	100%	

**Figure 34**

SEQ ID NO:1

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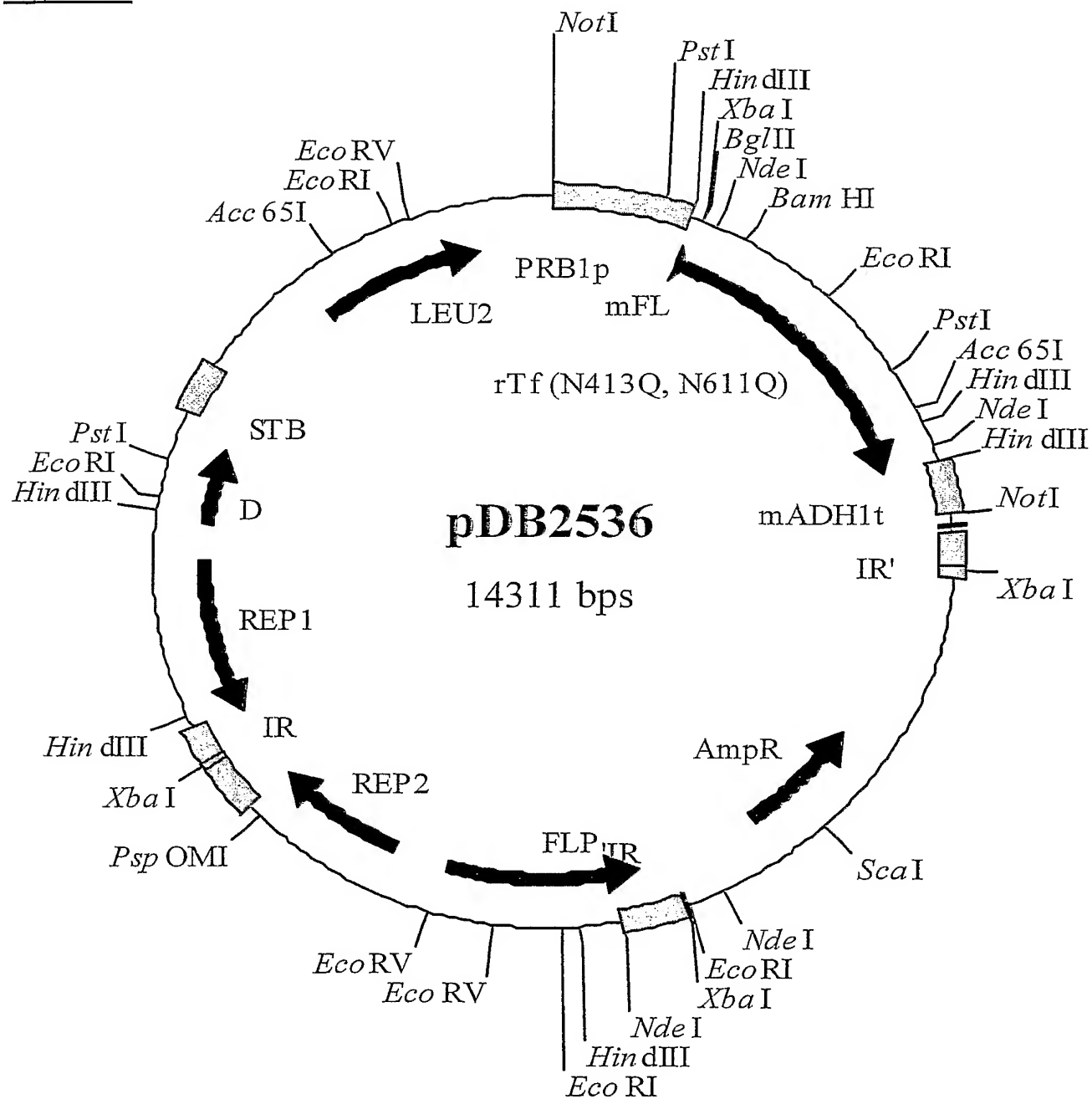
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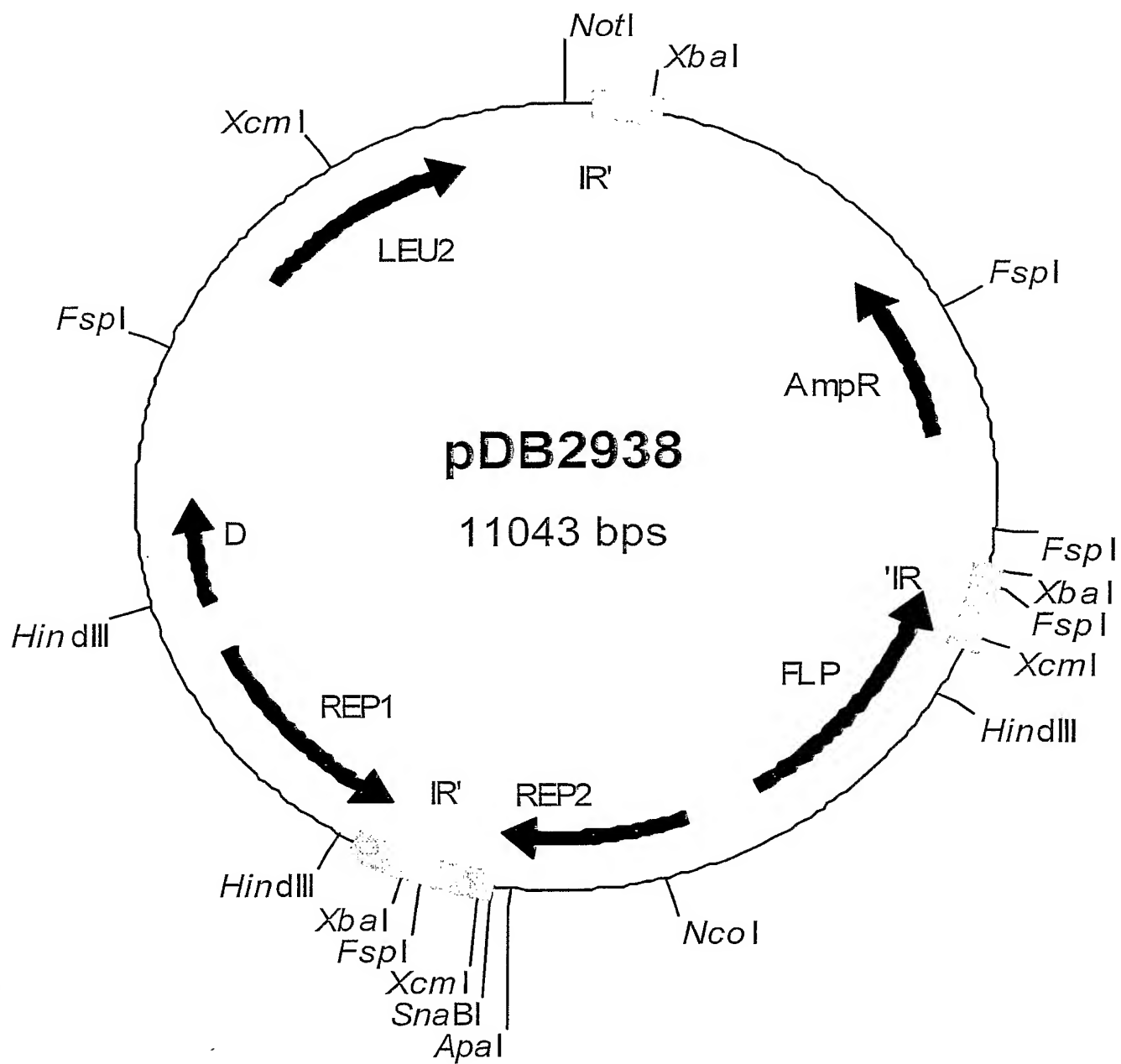
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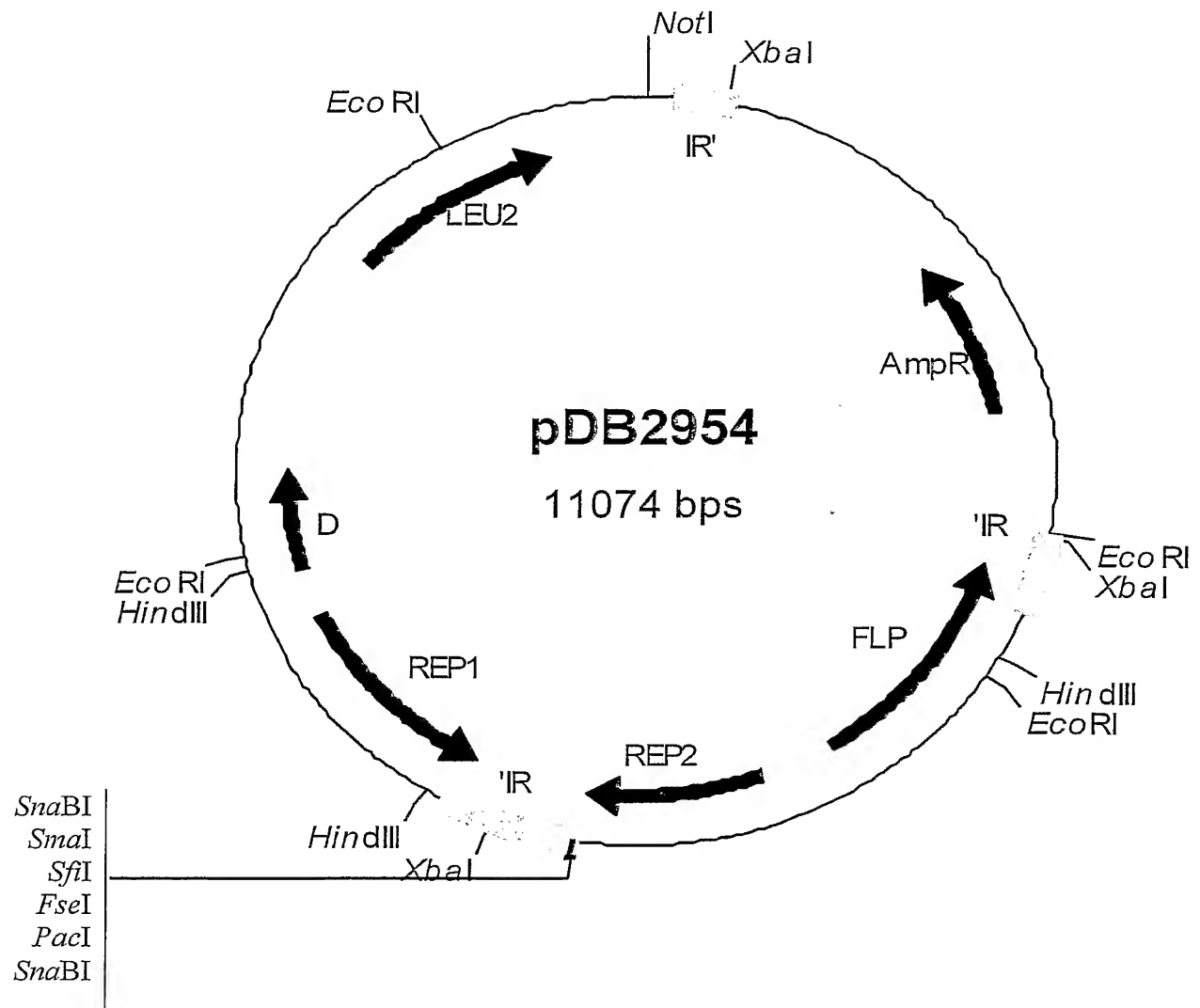
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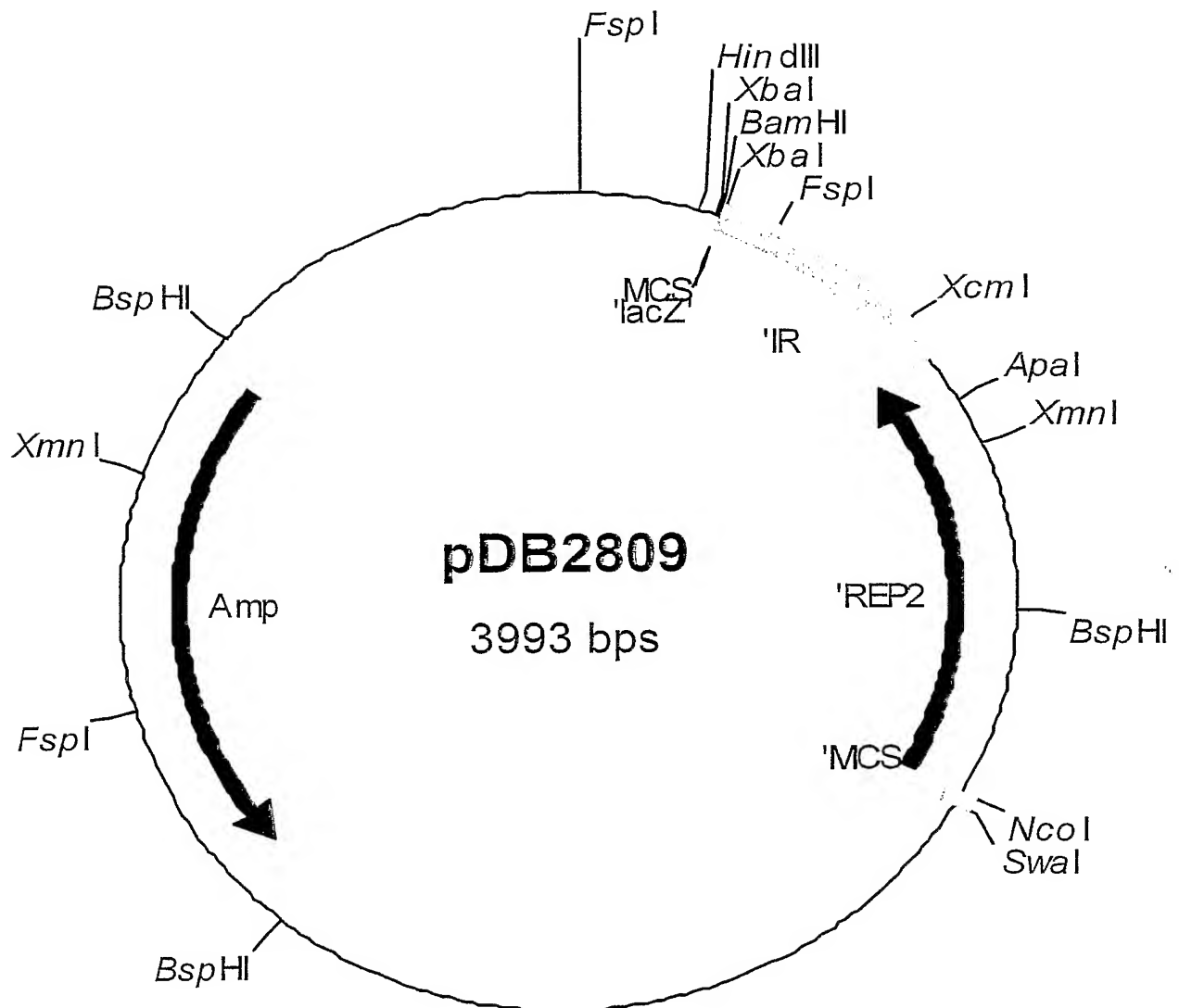
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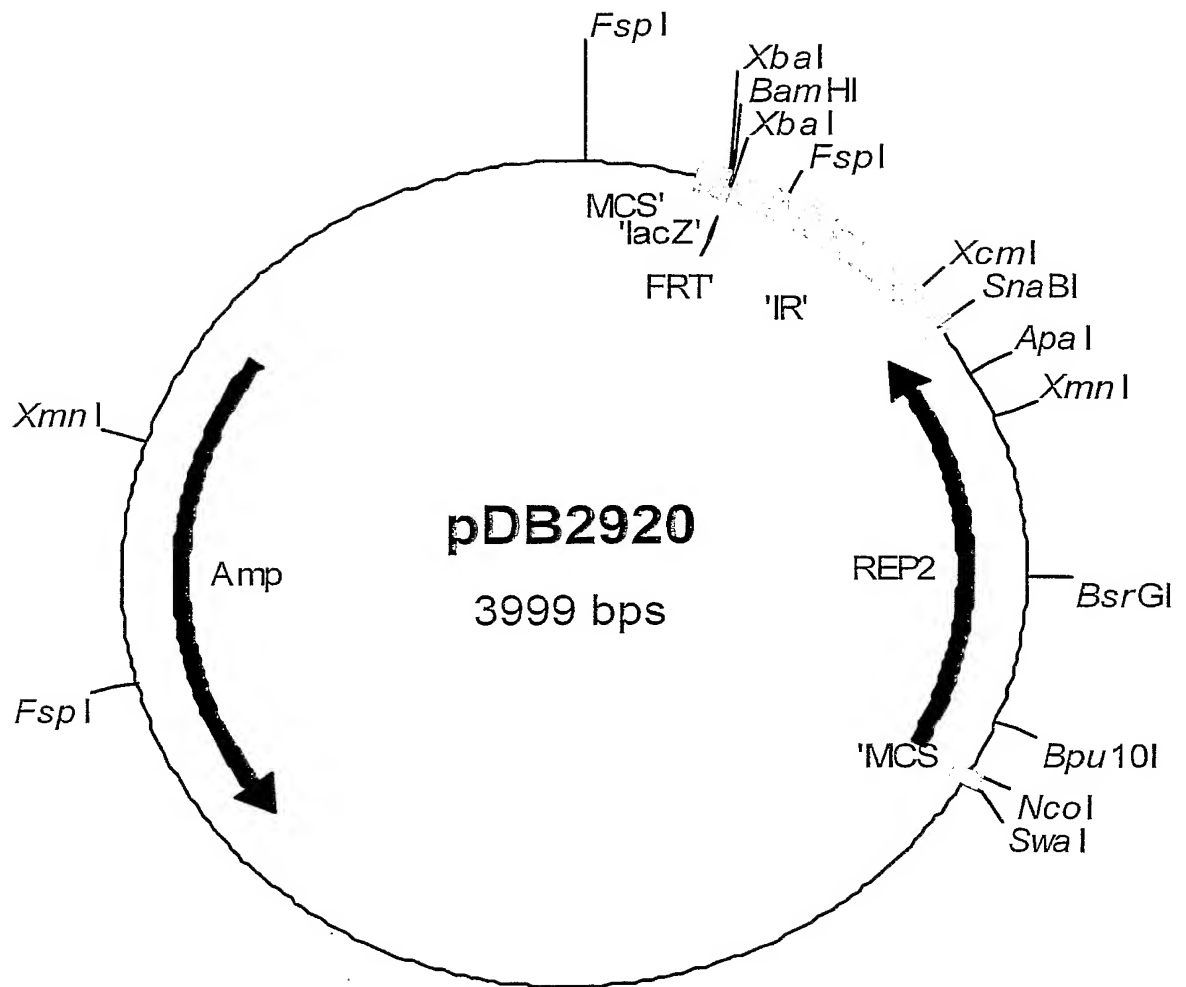
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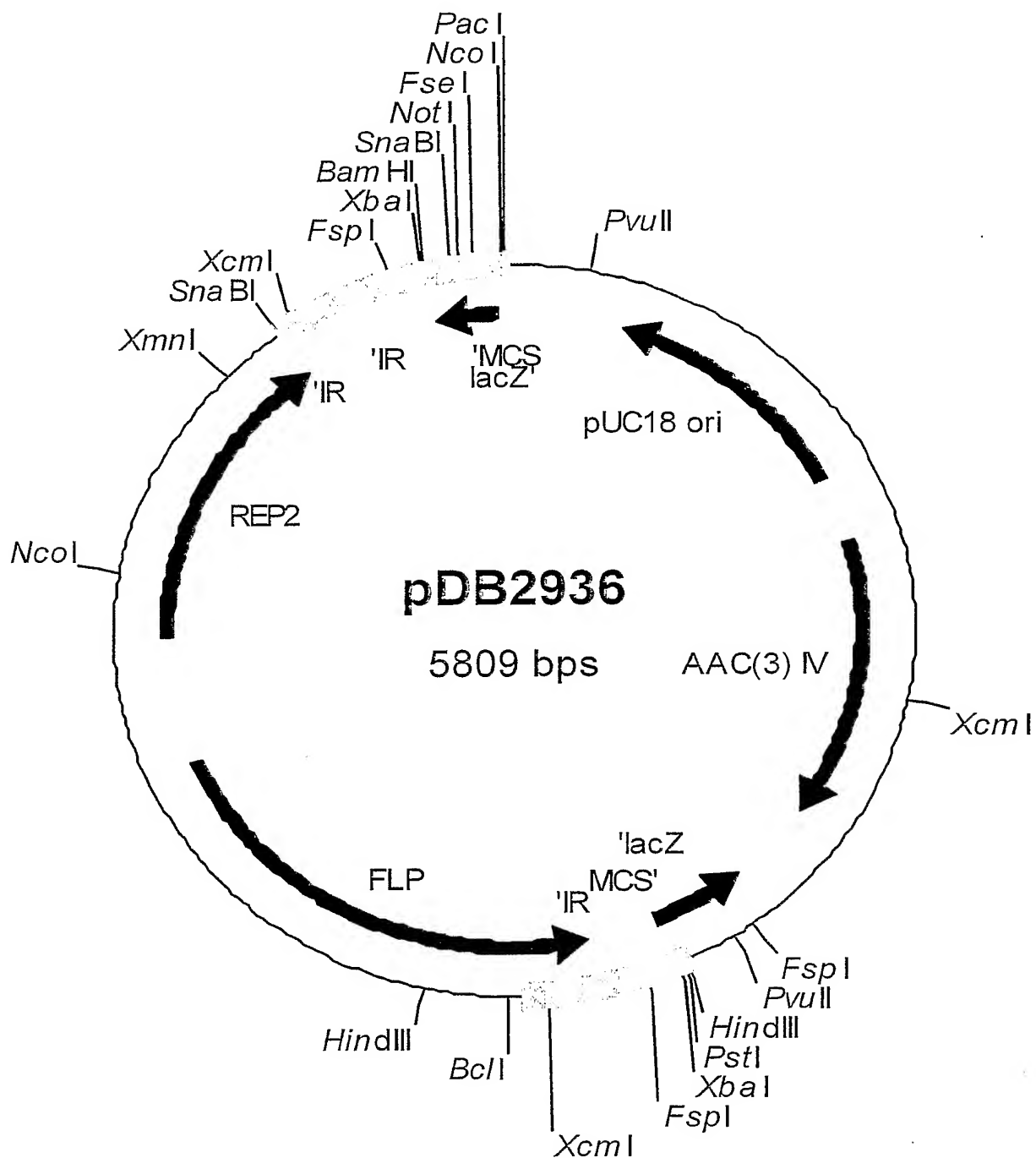
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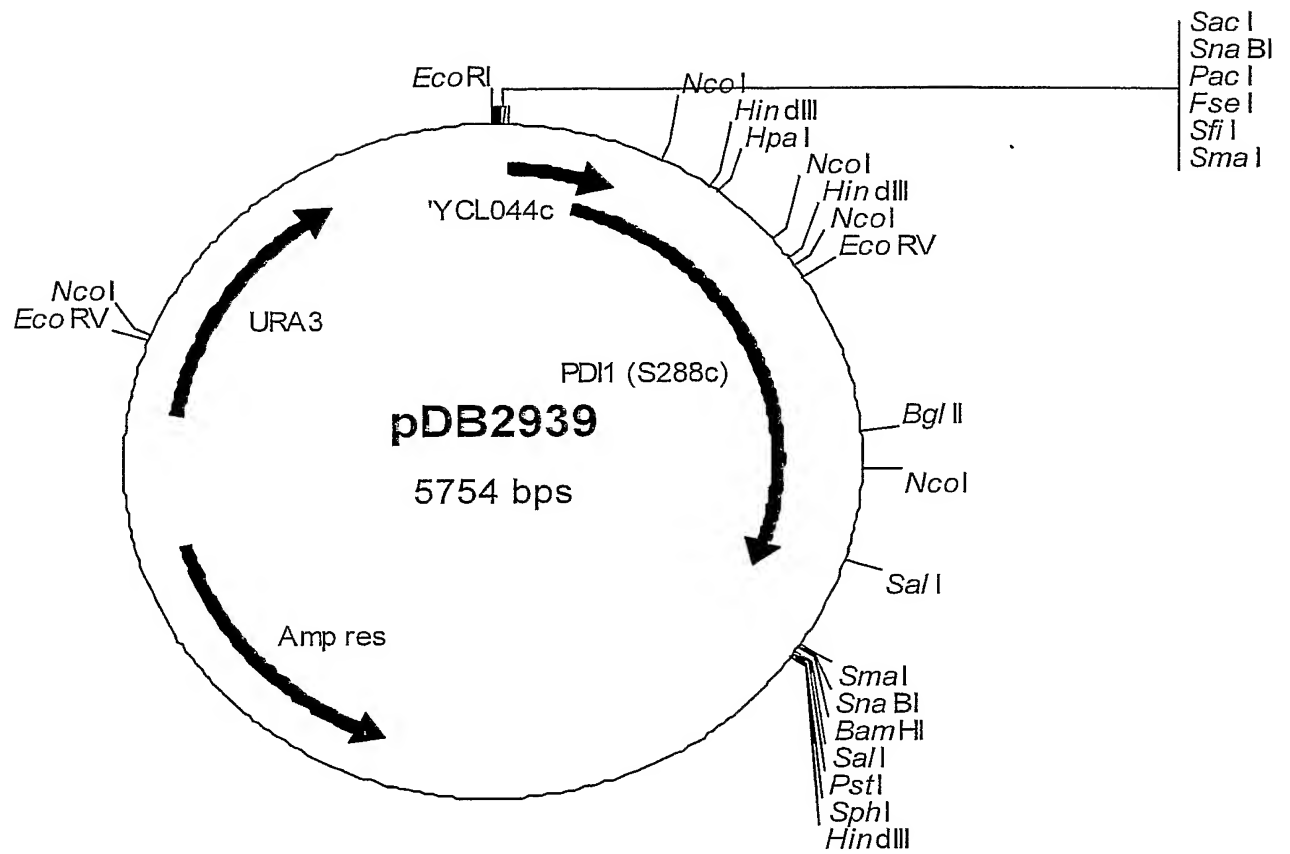


**Figure 38**

**Figure 39**

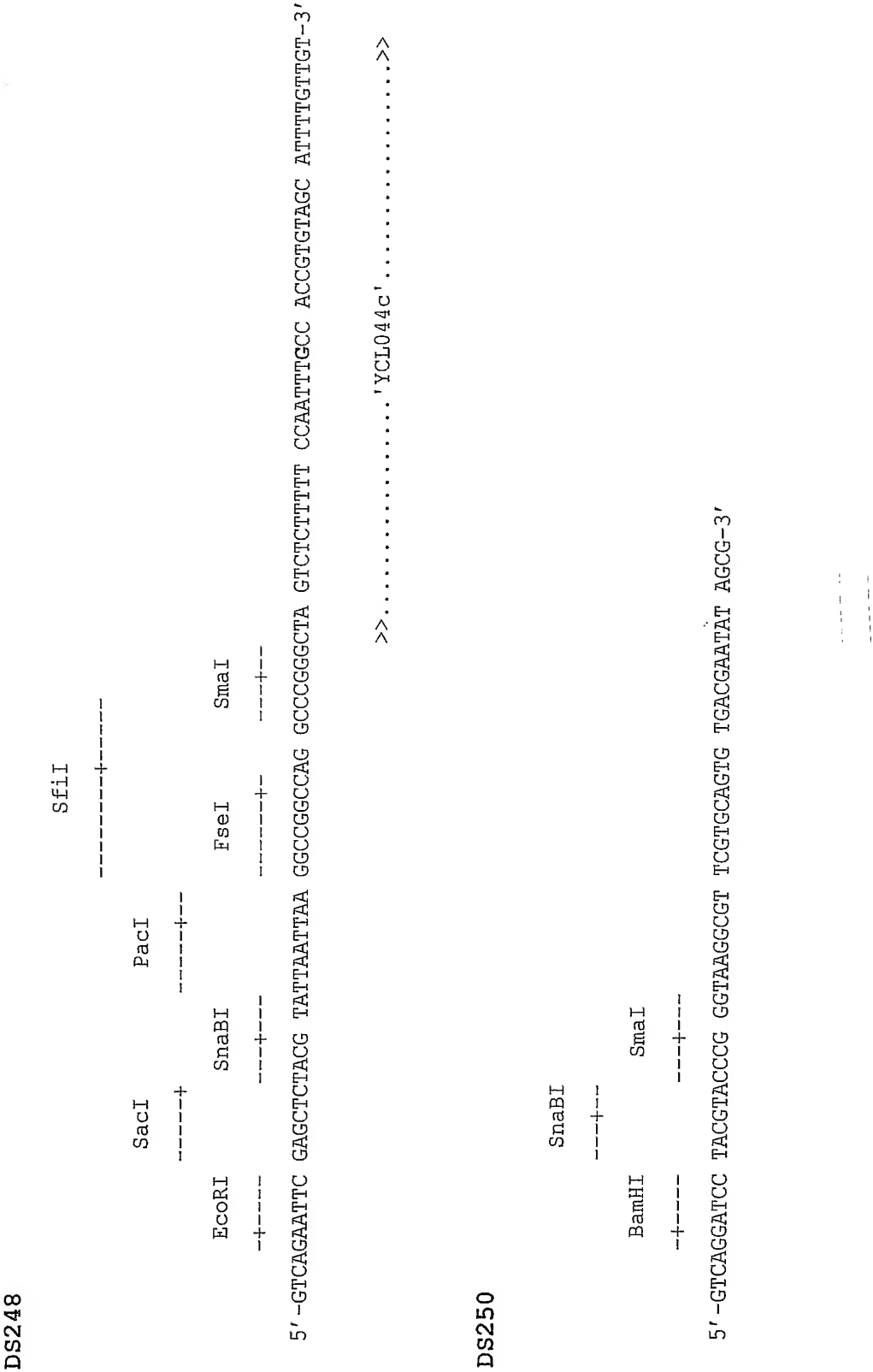
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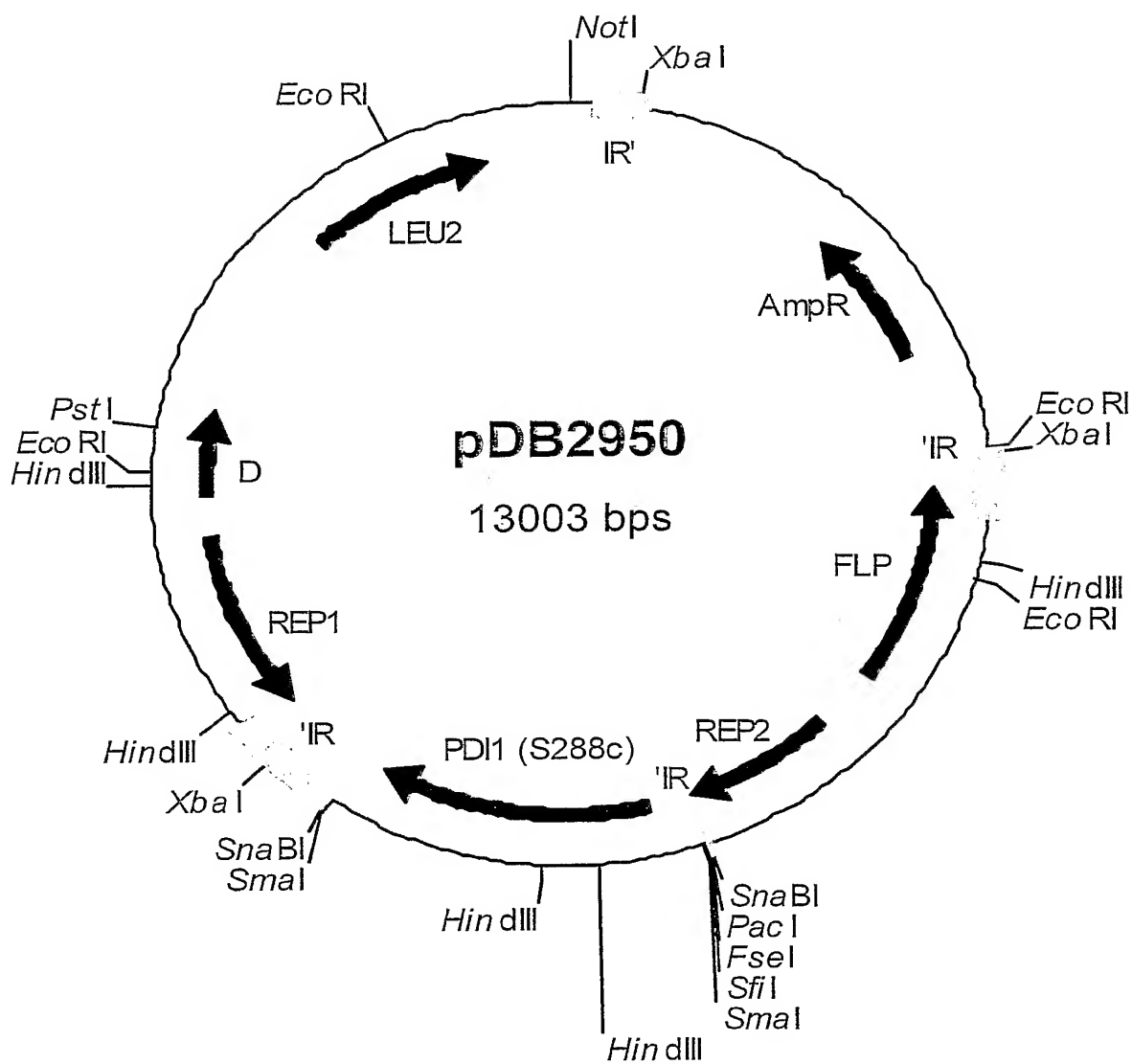
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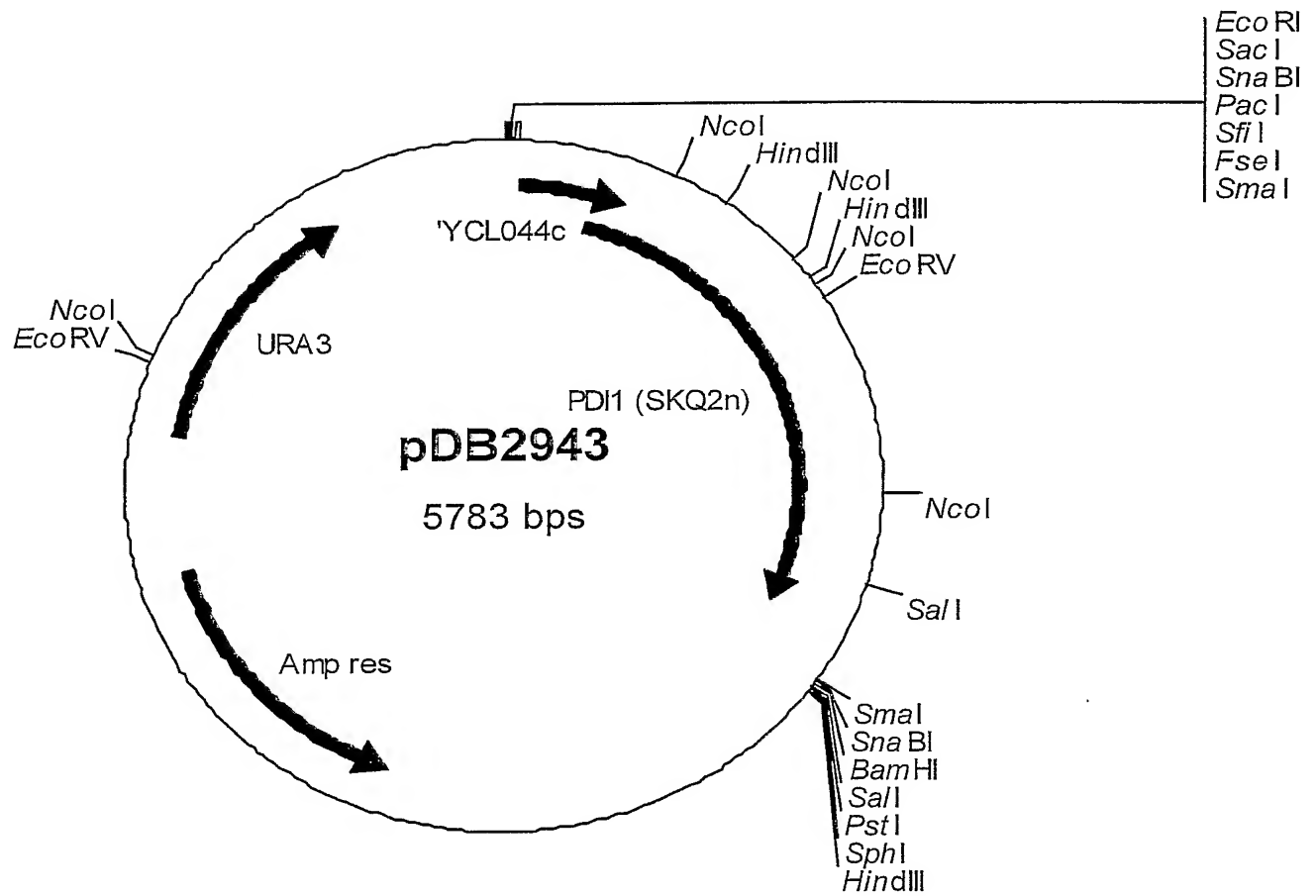
**Figure 42**

**Figure 43**

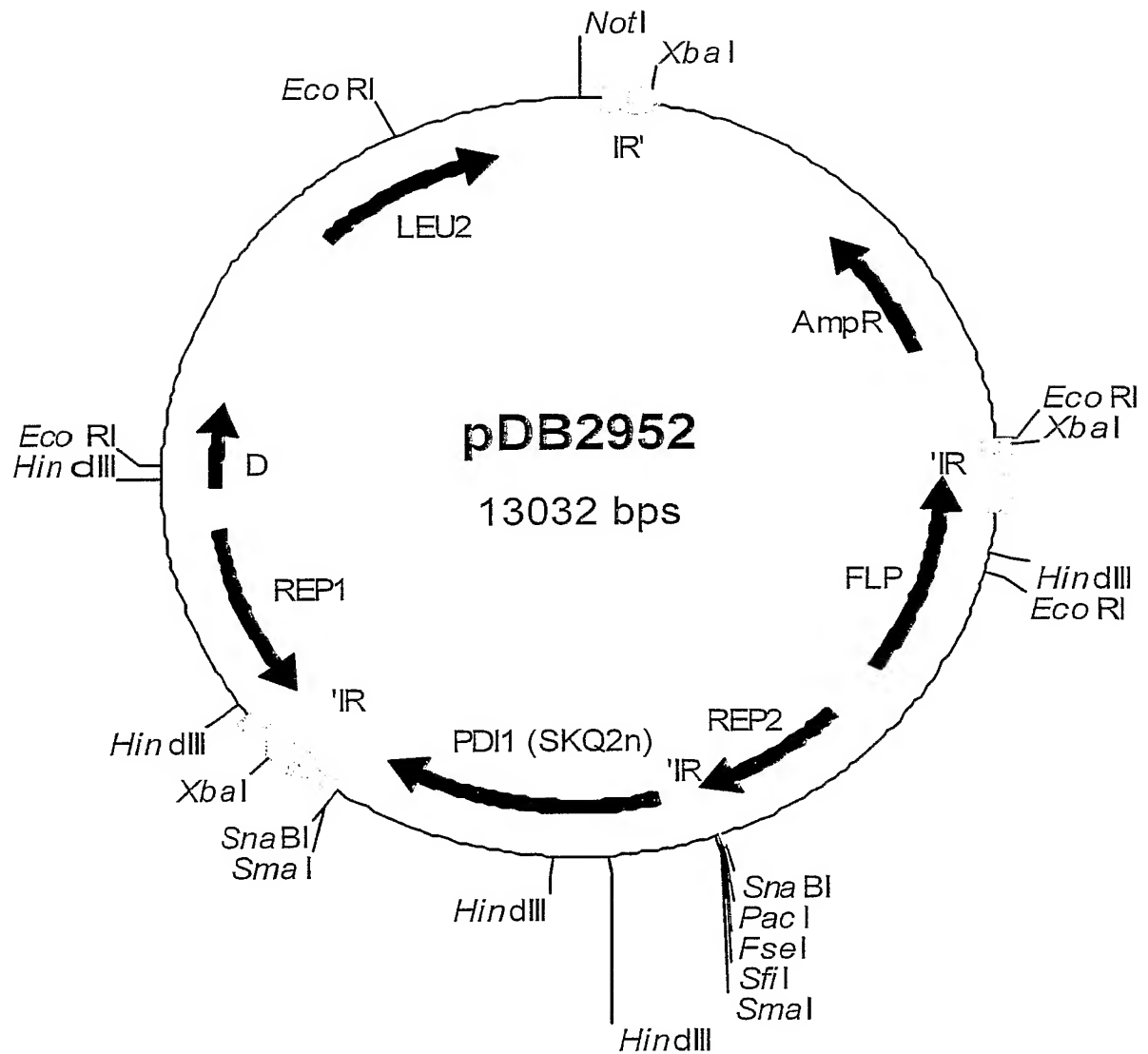
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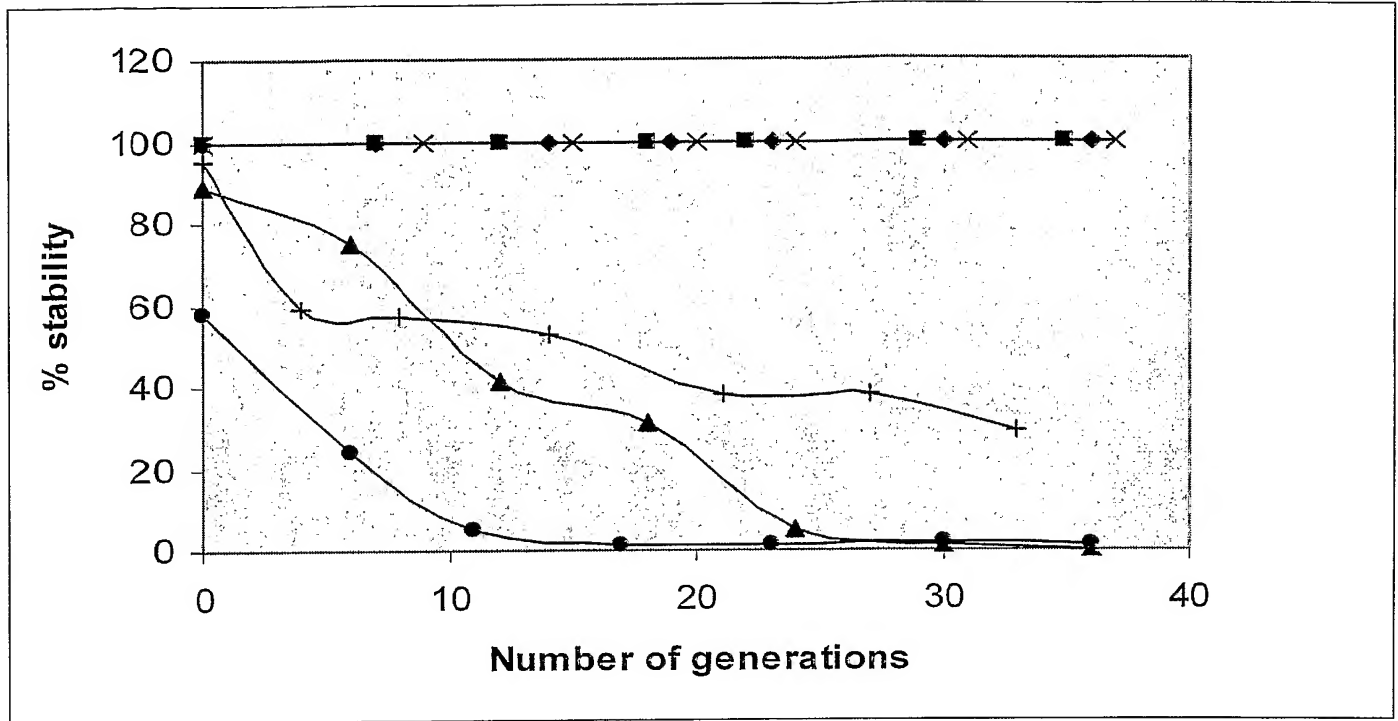


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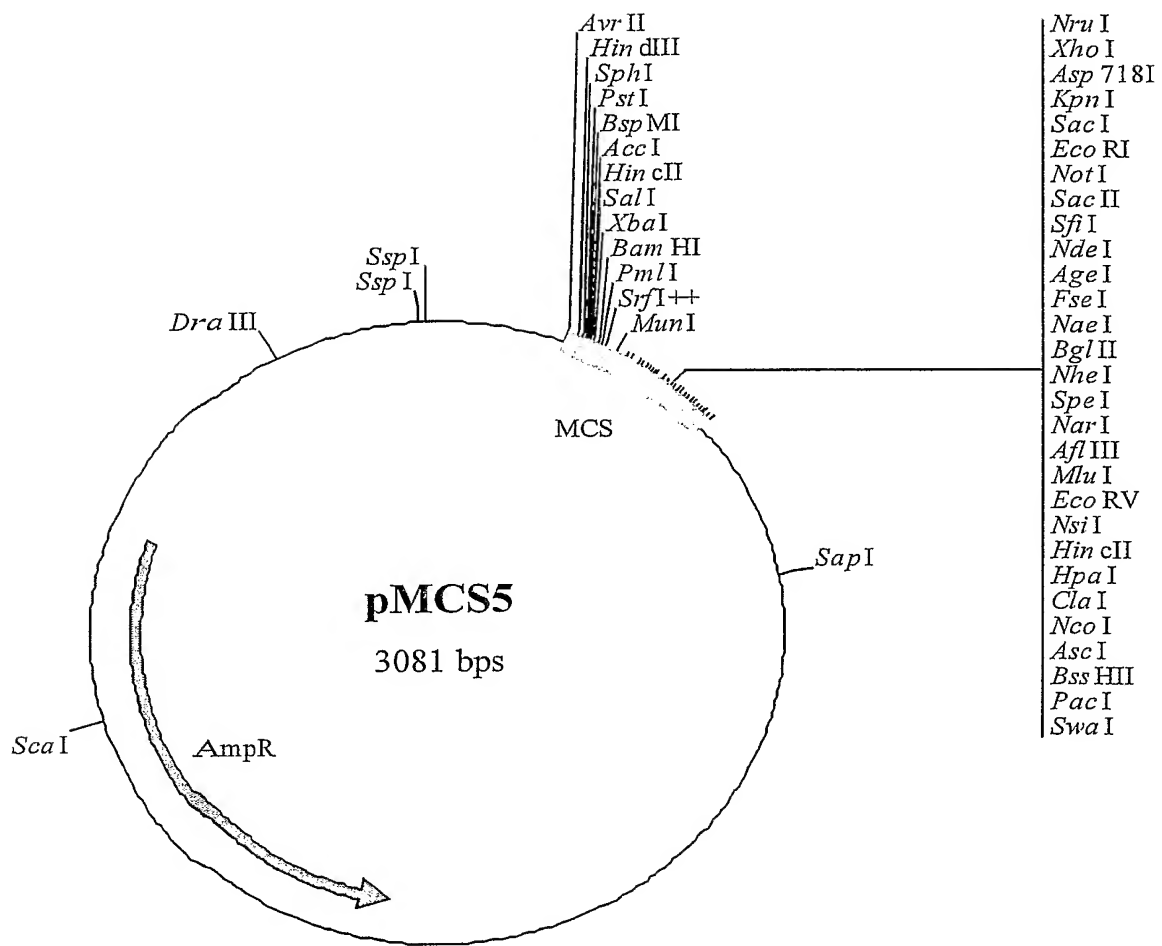
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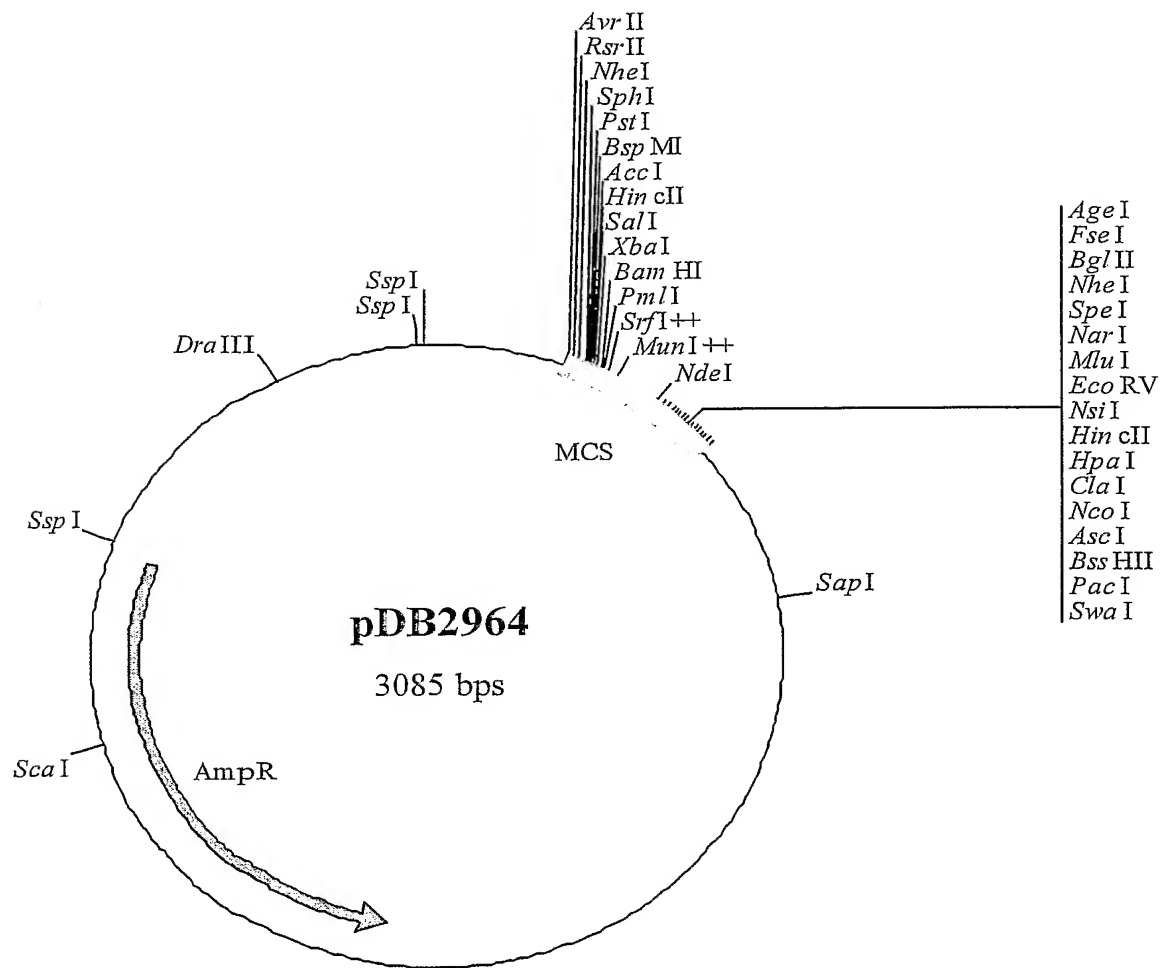


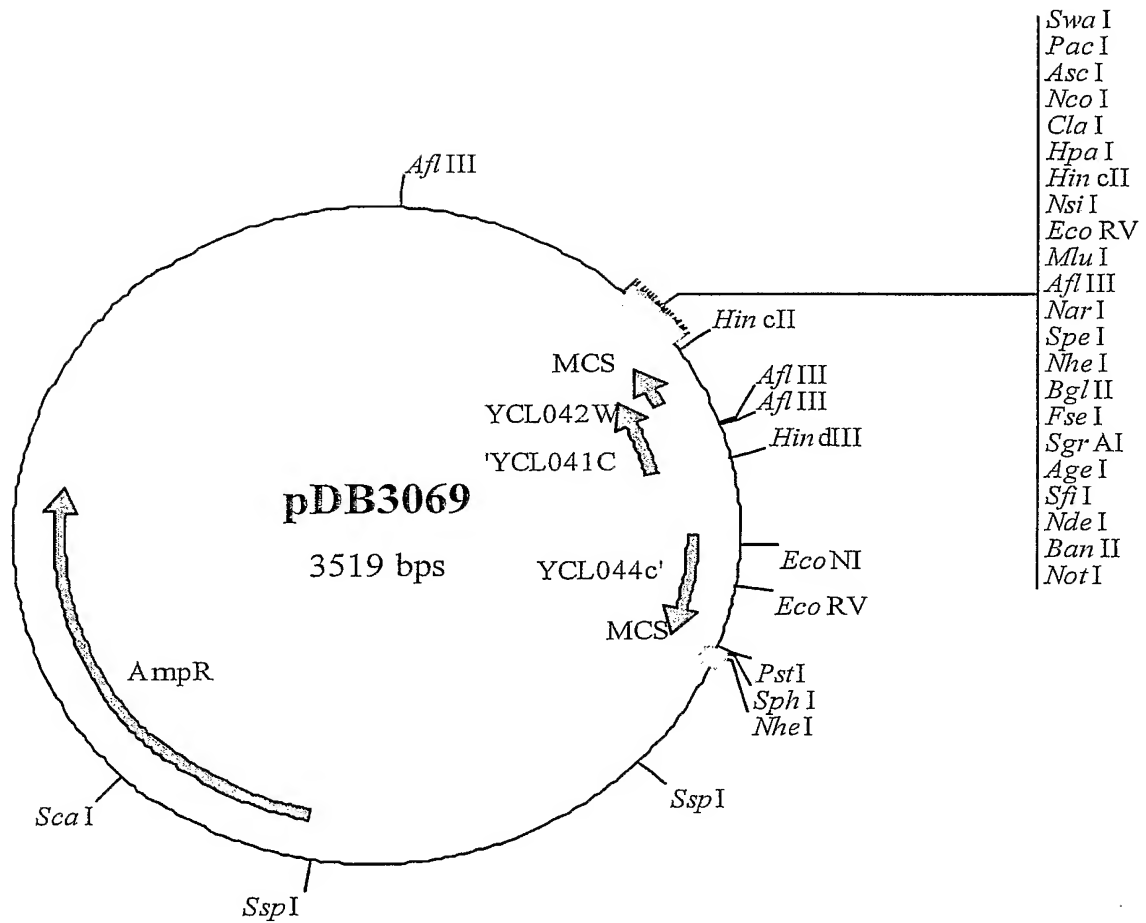
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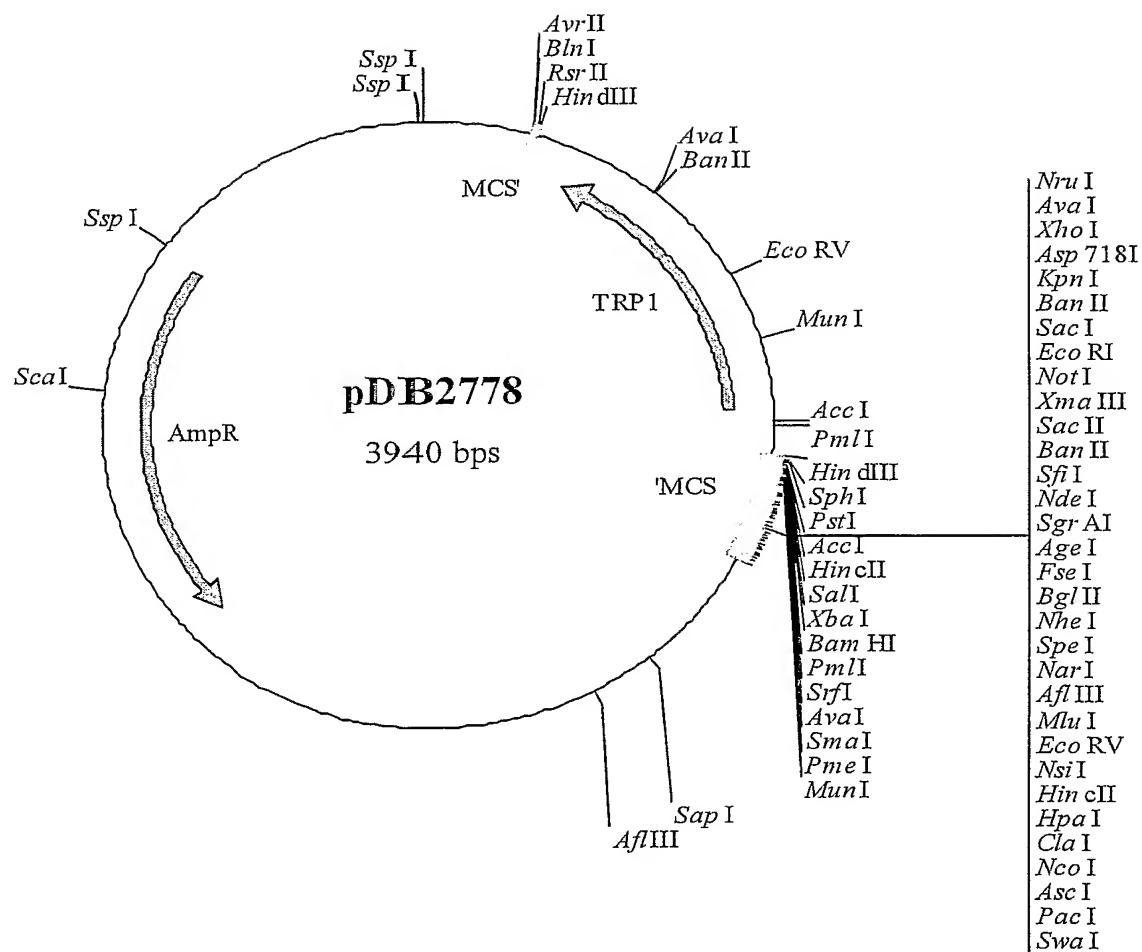
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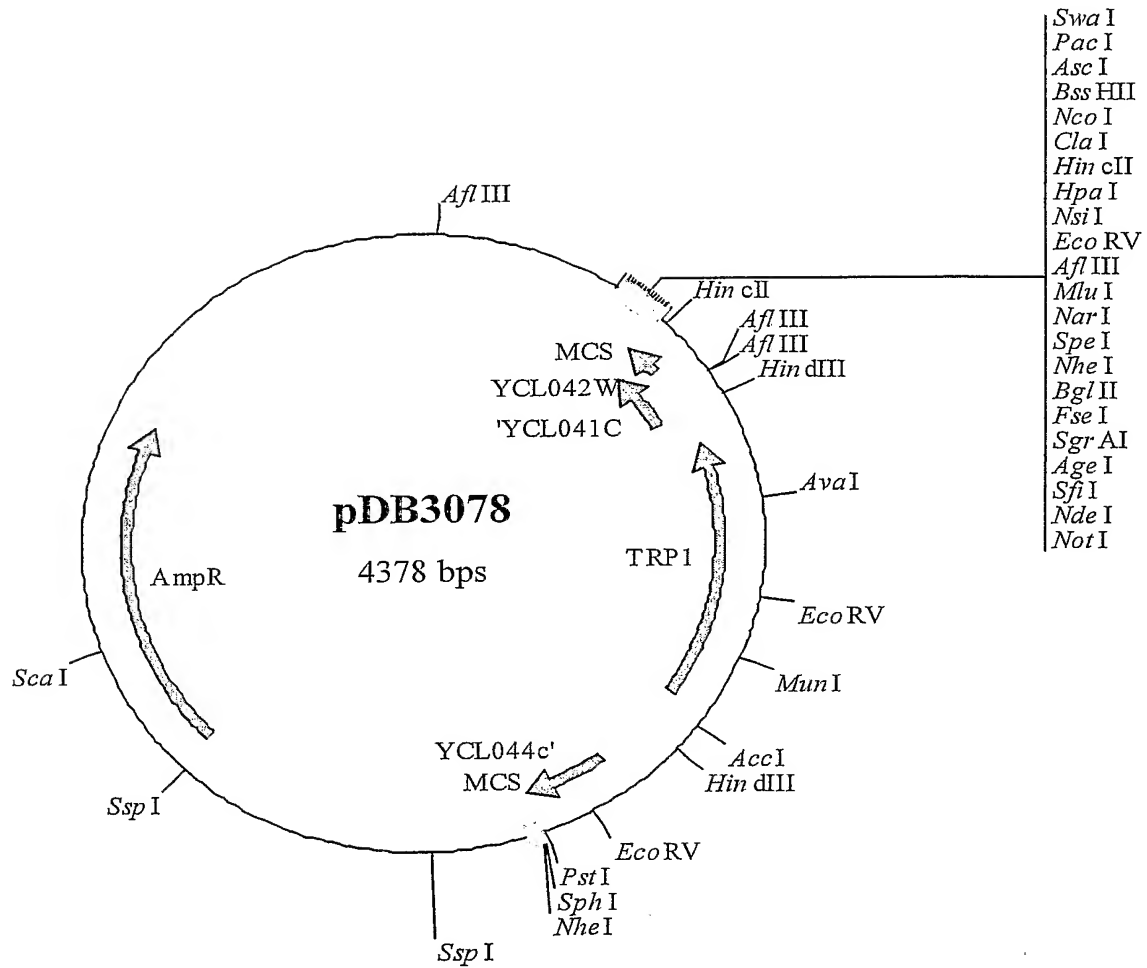
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- ×— pDB2812
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- ▲— pDB2817
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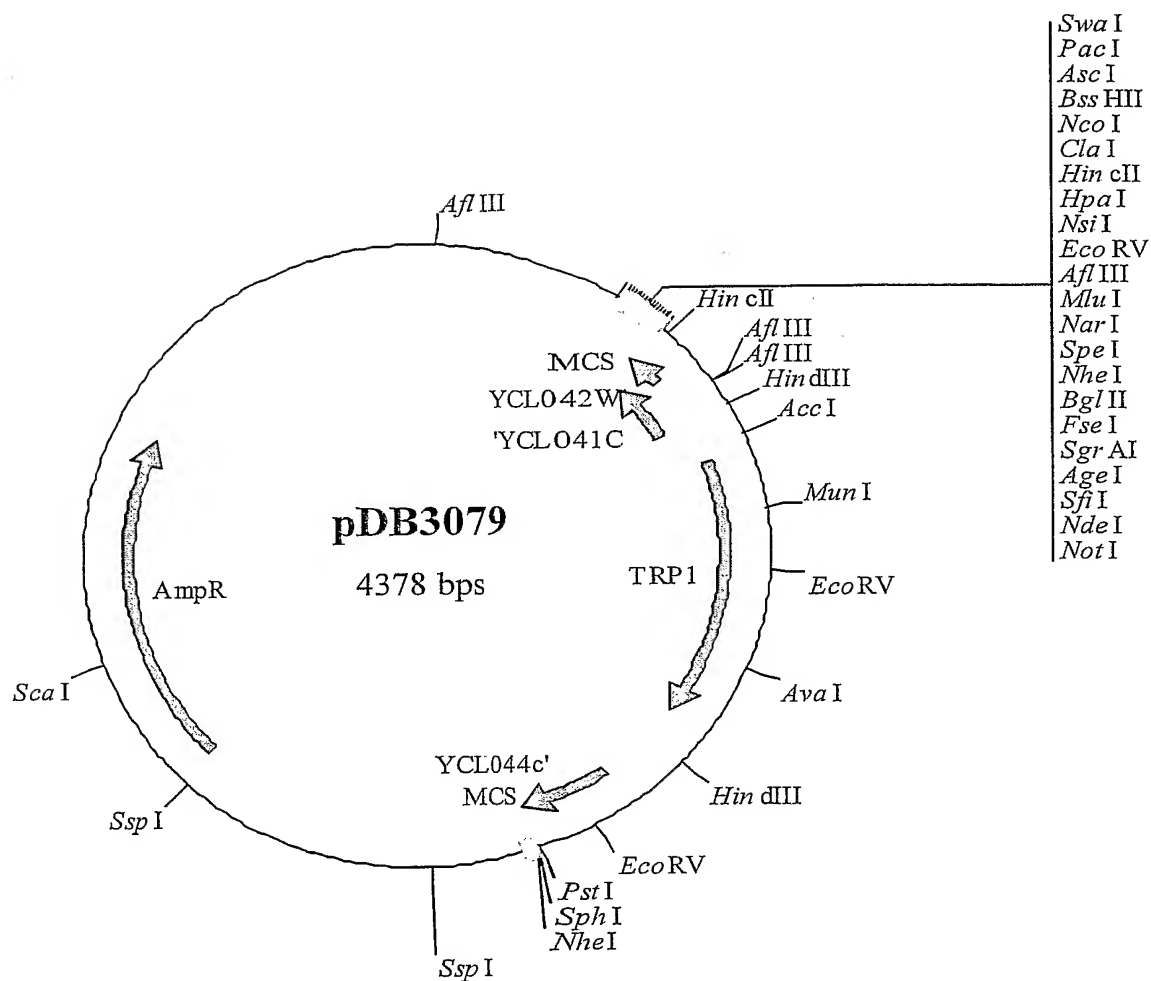
**FIGURE 48**

**FIGURE 49**

**FIGURE 50**

**FIGURE 51**

**FIGURE 52**

**FIGURE 53**



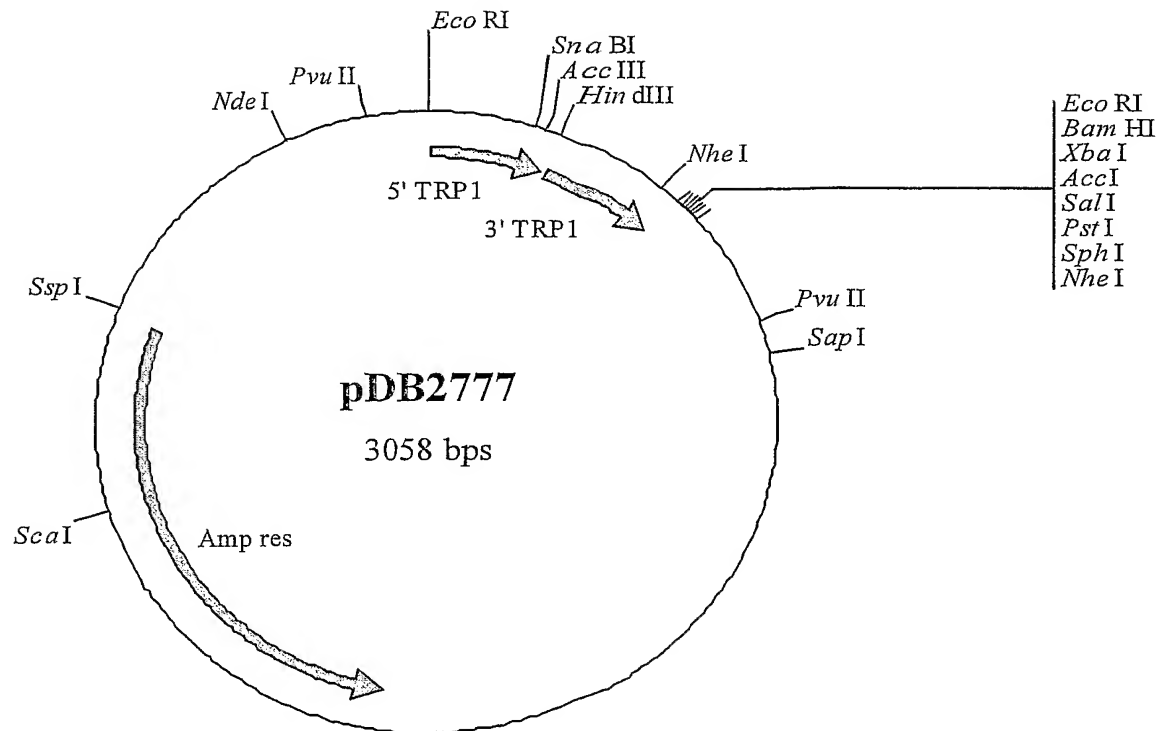
**FIGURE 54**

FIGURE 55

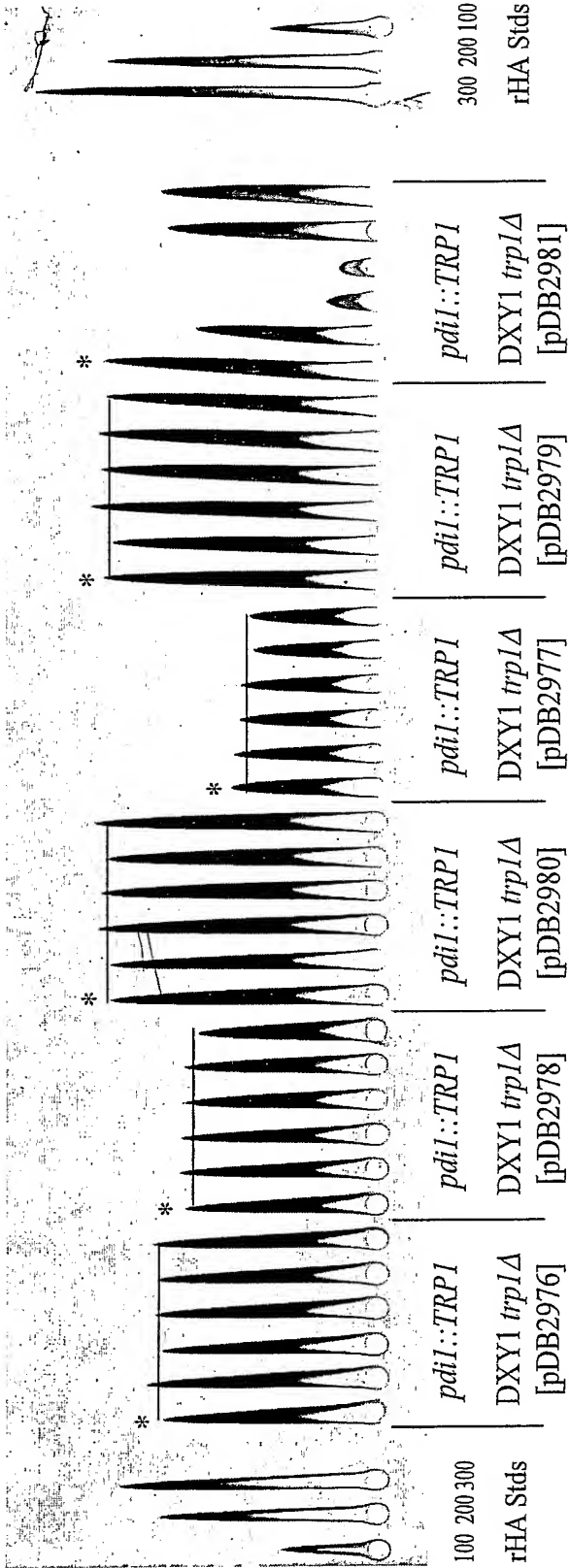
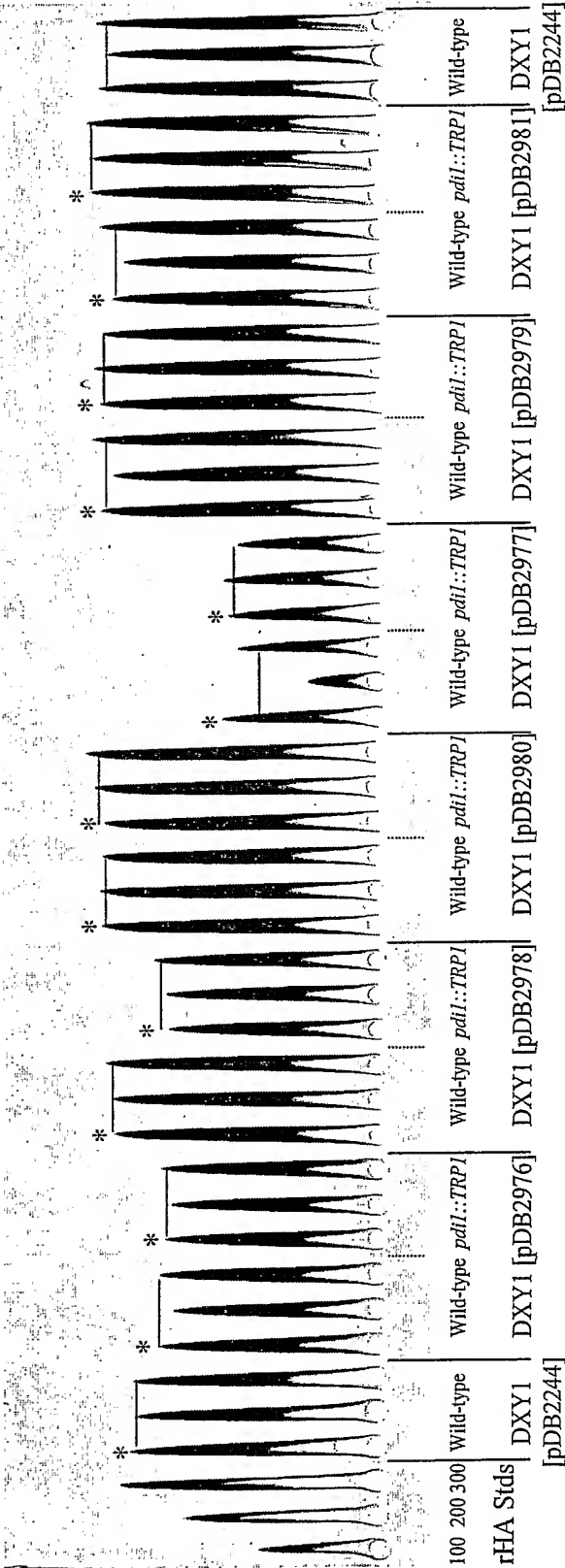
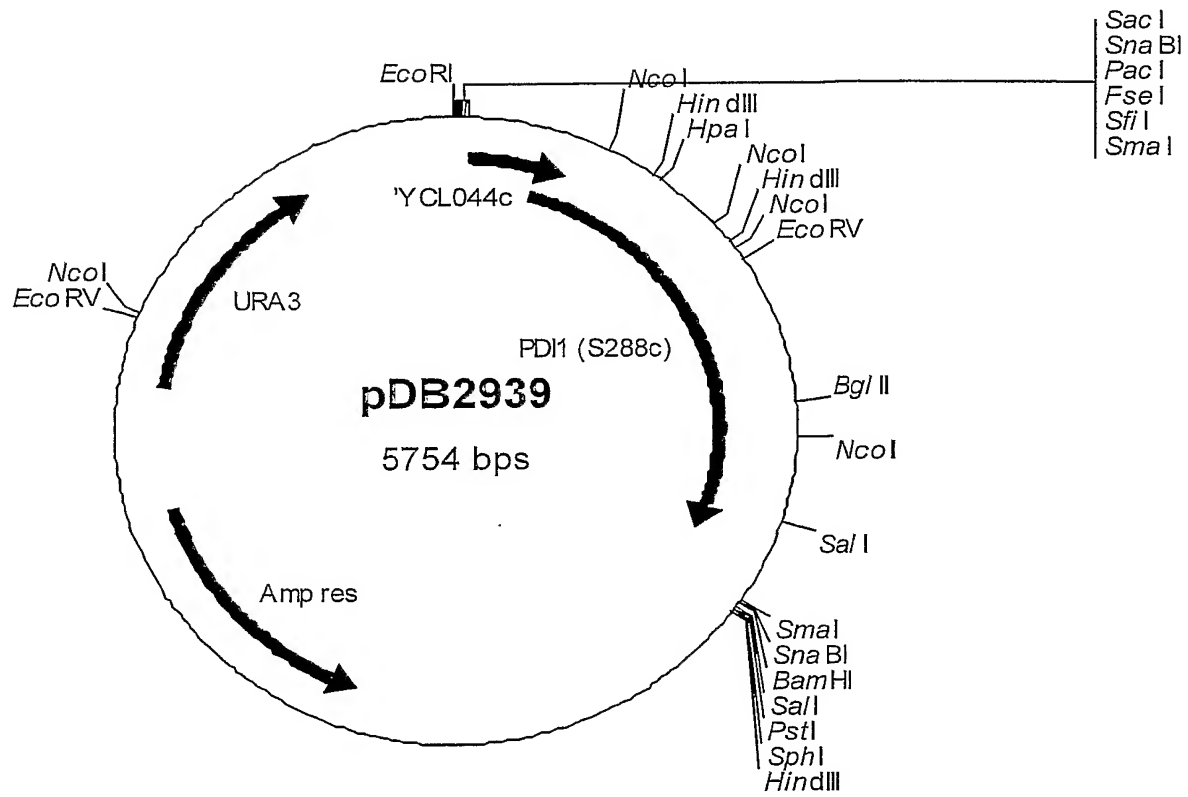
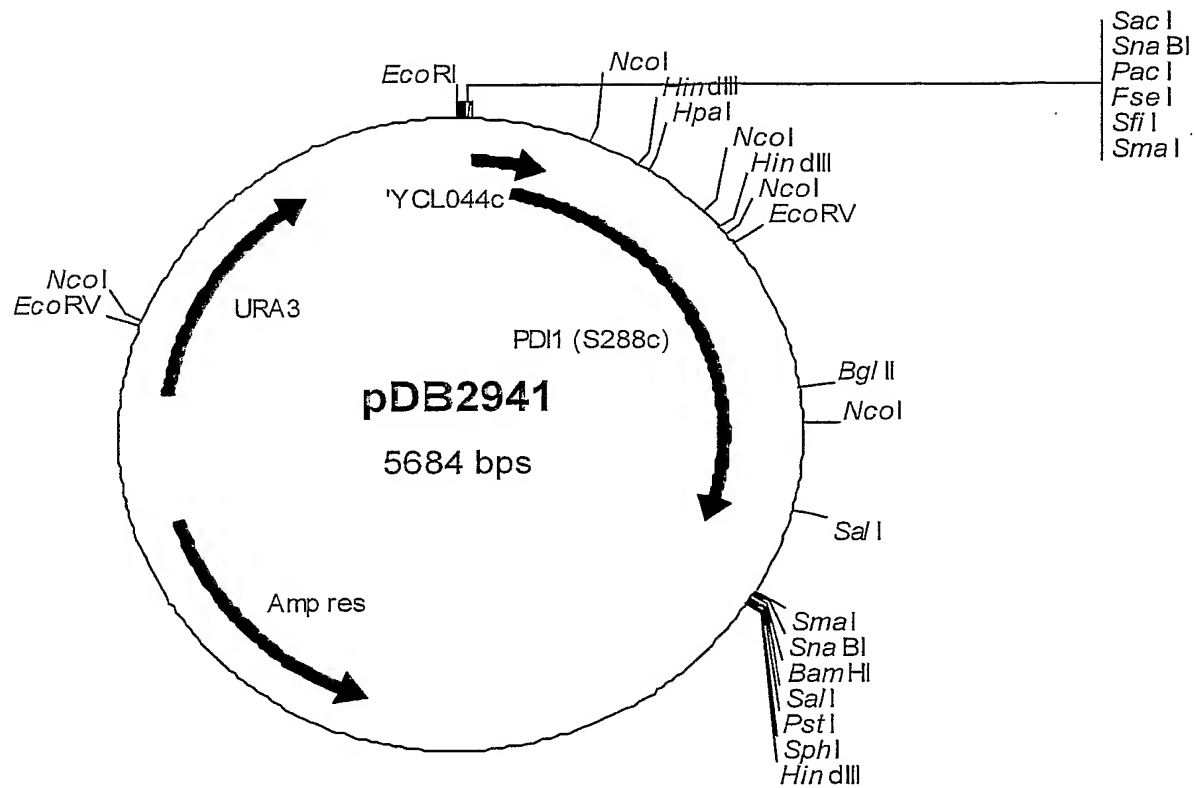
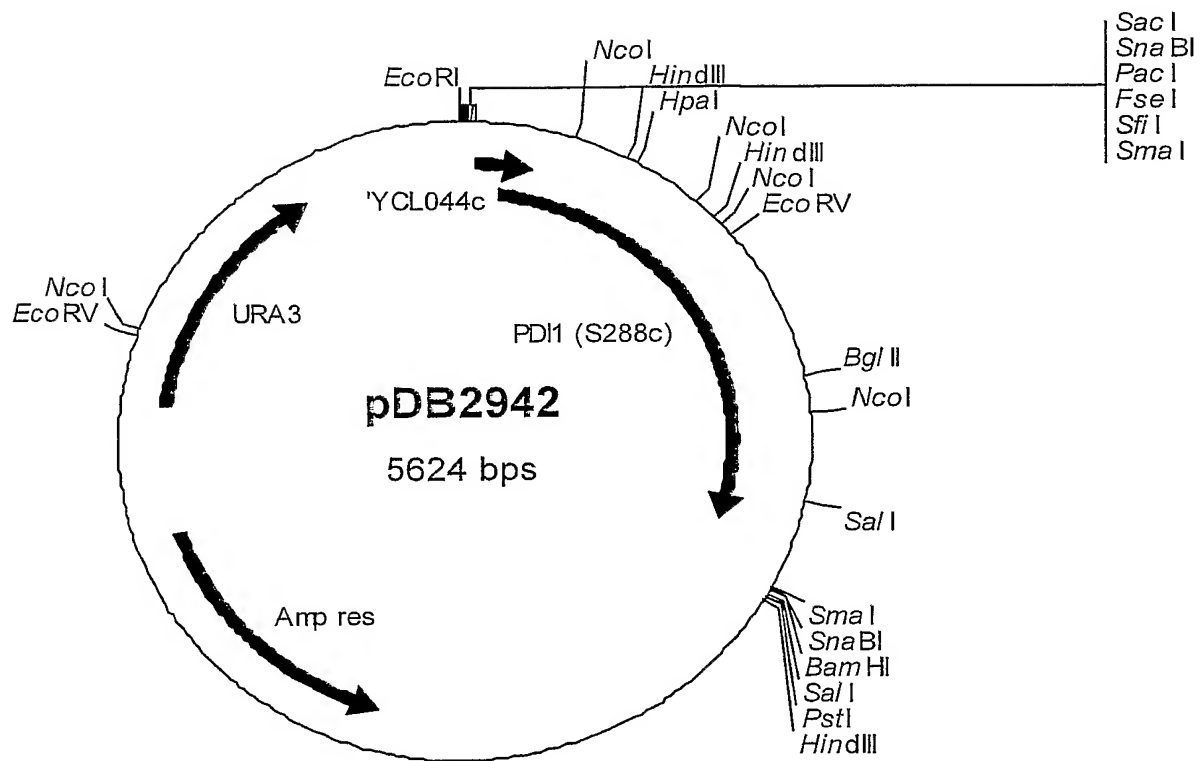


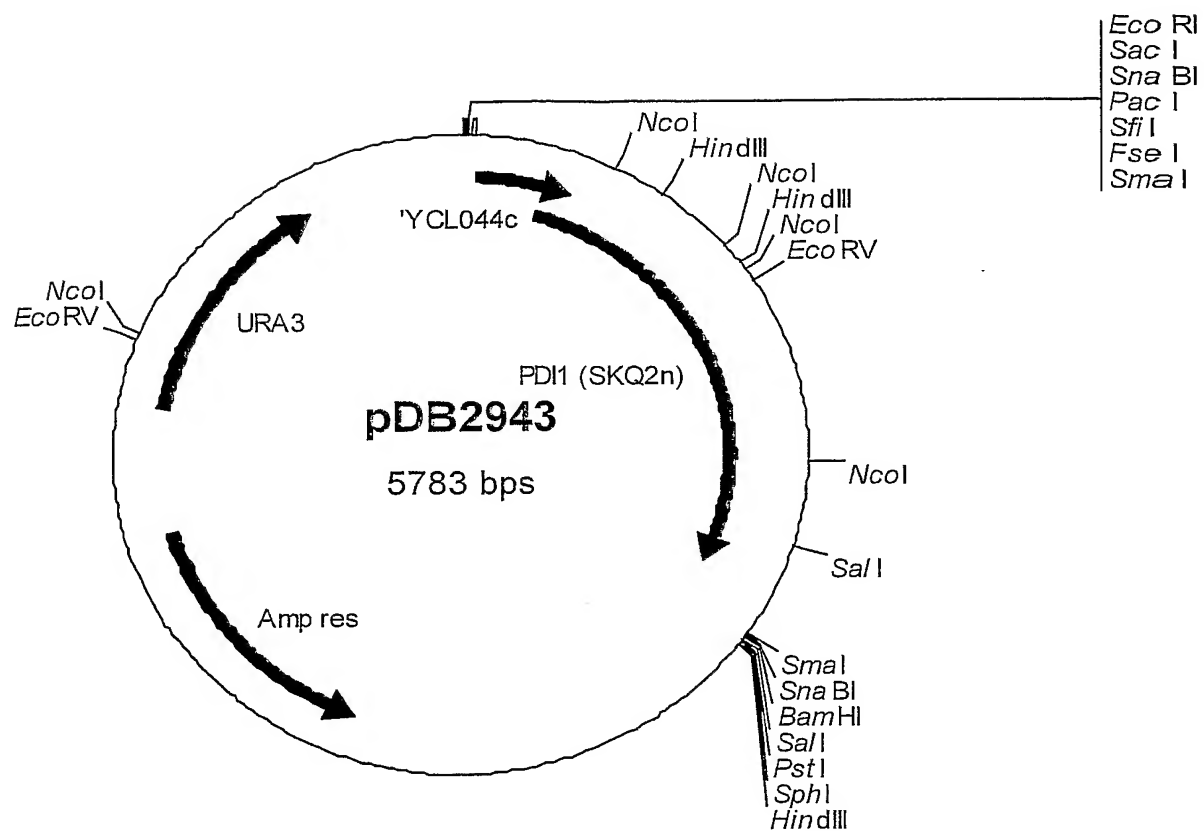
FIGURE 56

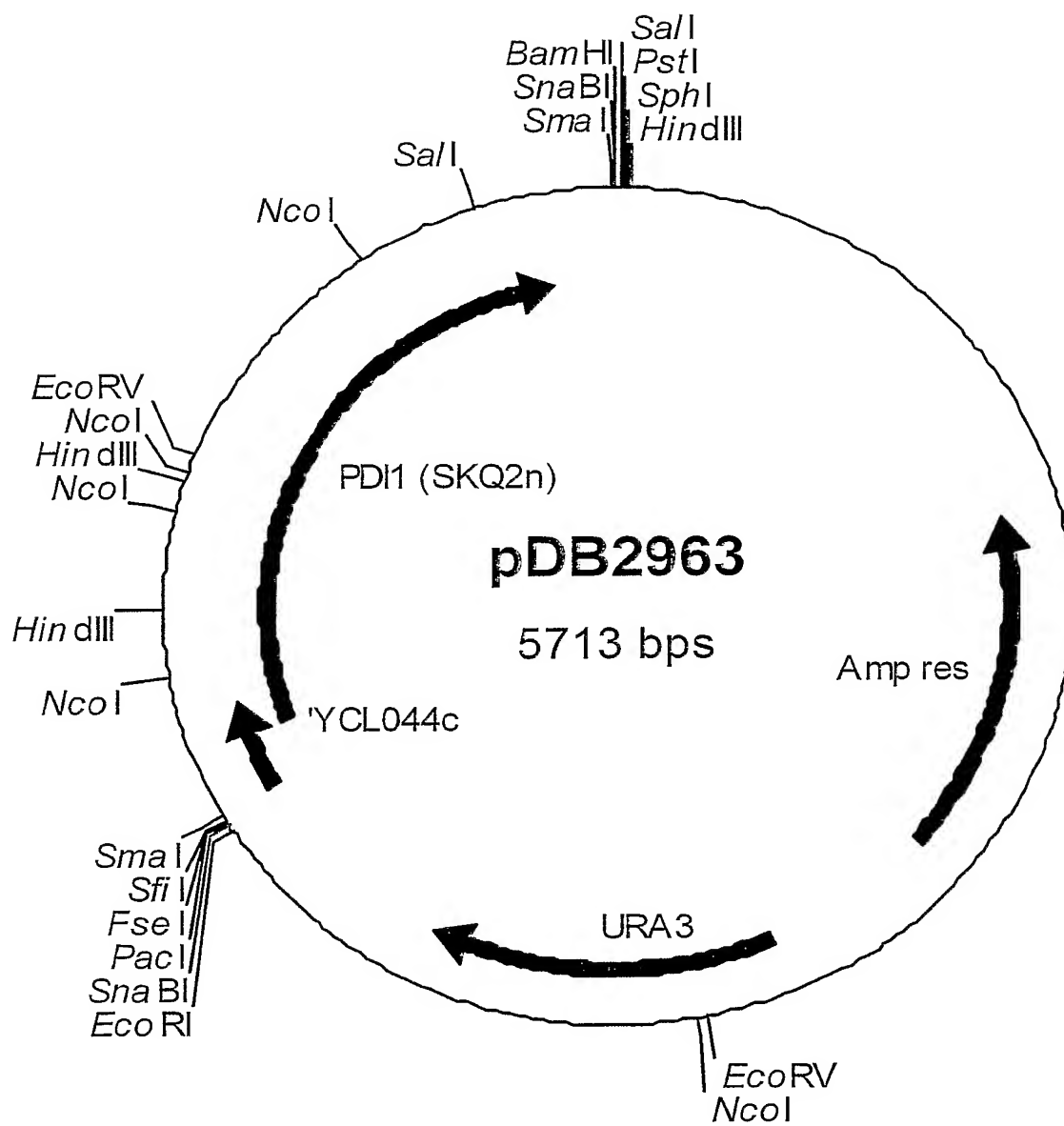


**Figure 57**

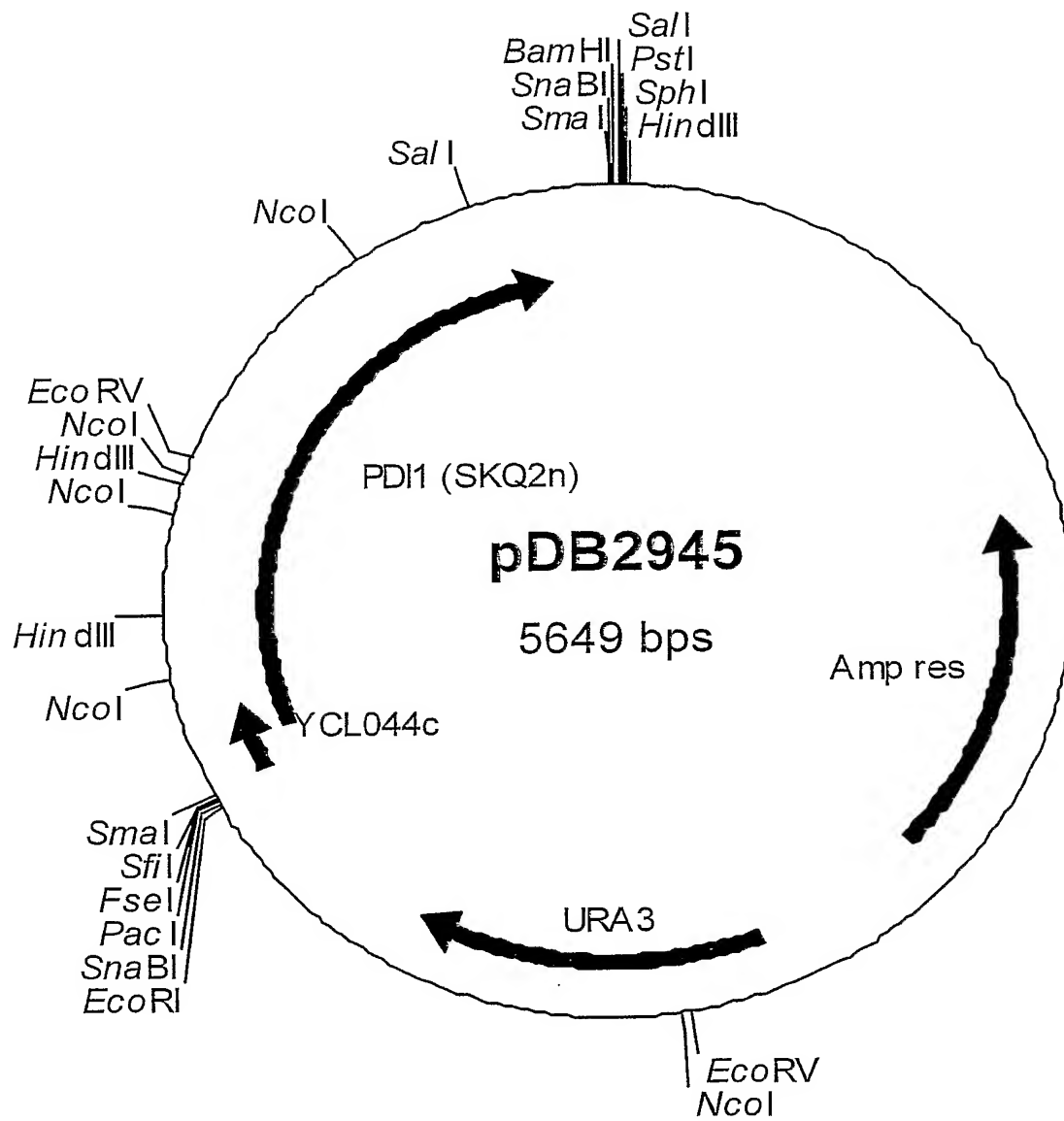
**Figure 58**

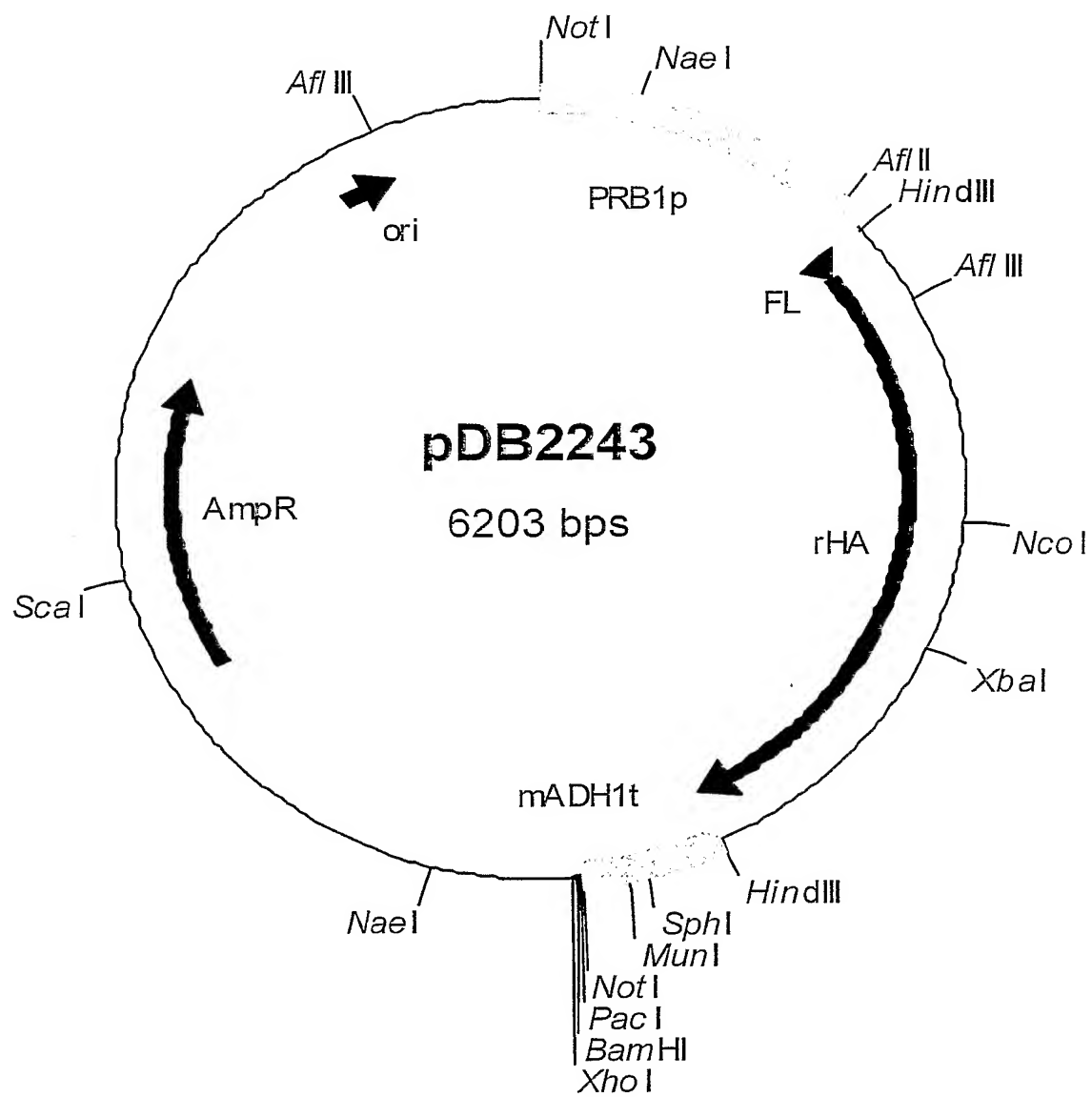
**Figure 59**

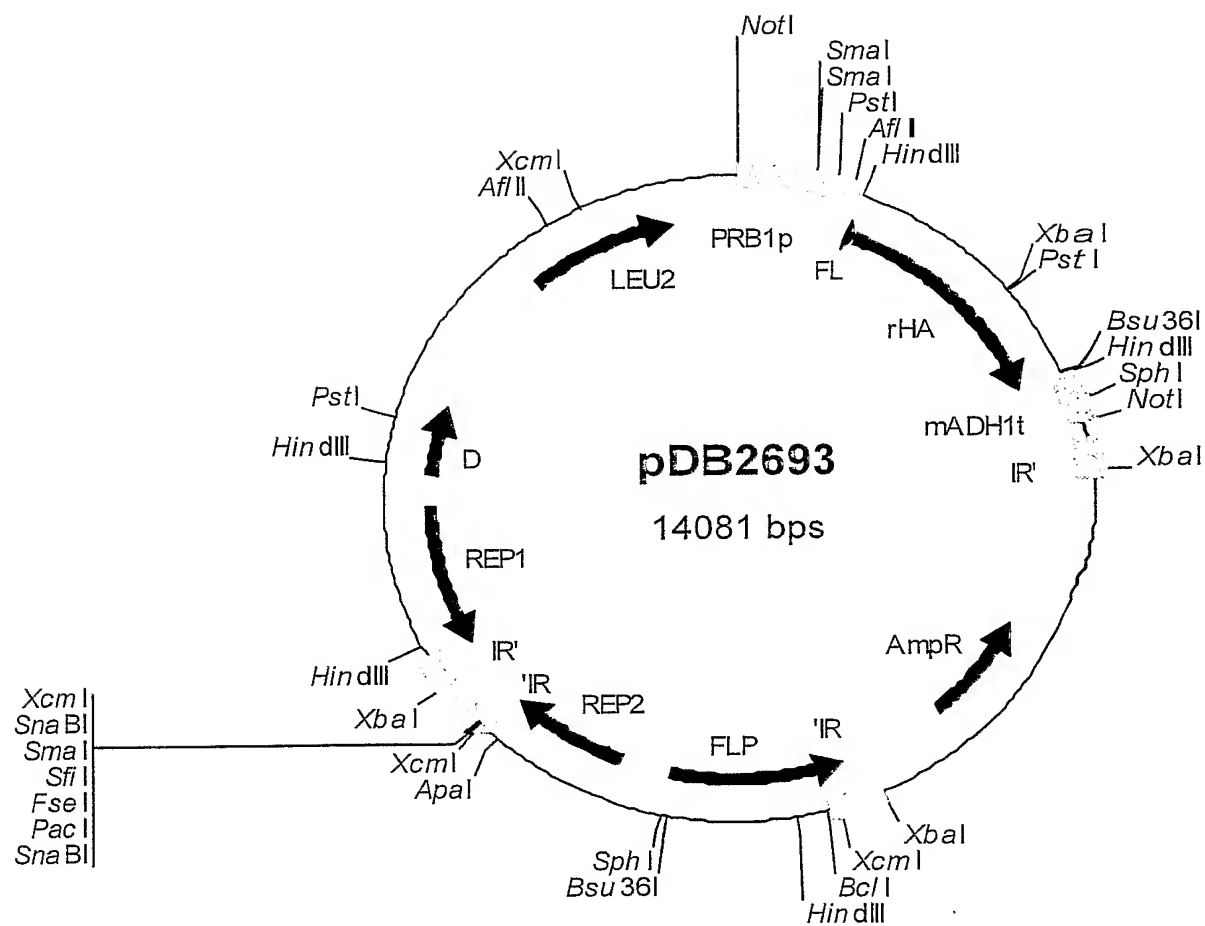
**Figure 60**

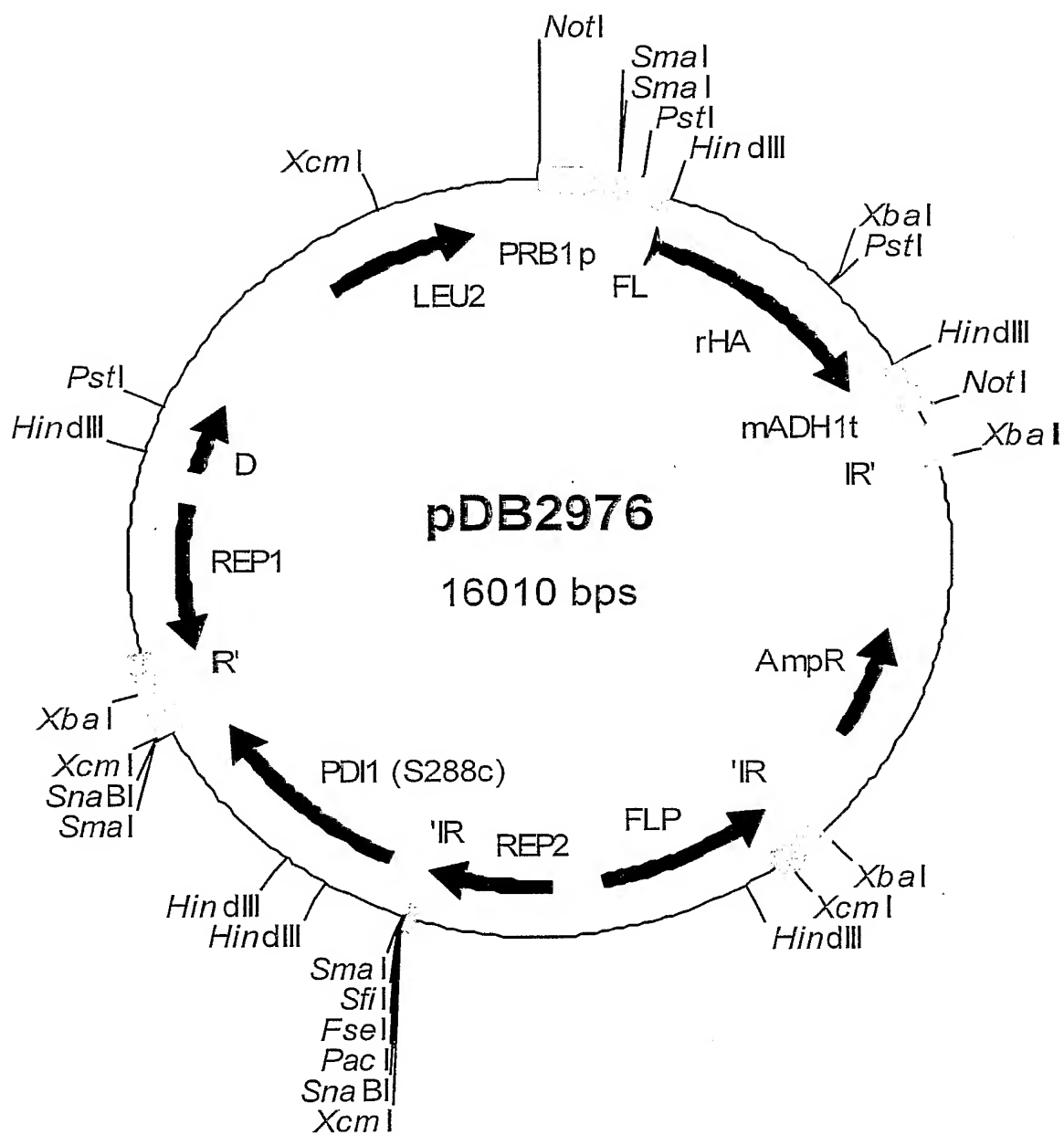
**Figure 61**

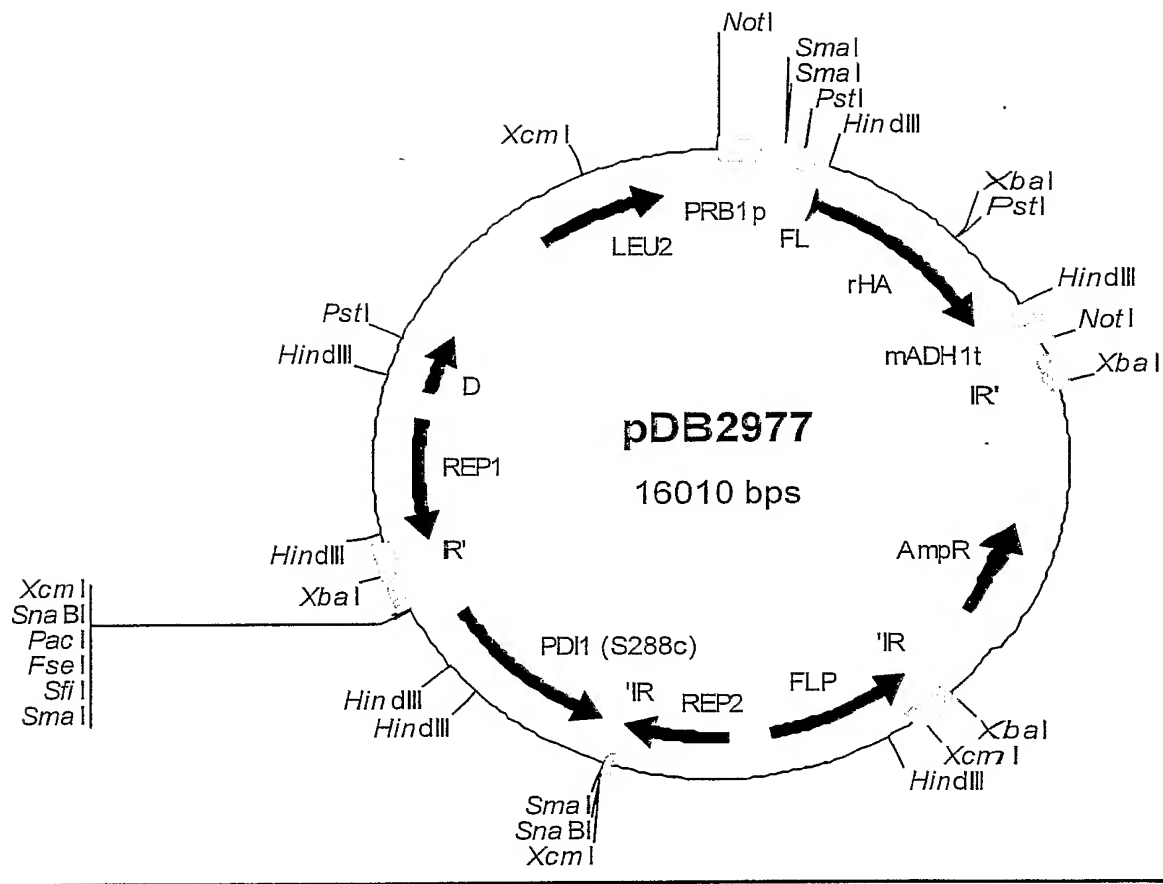


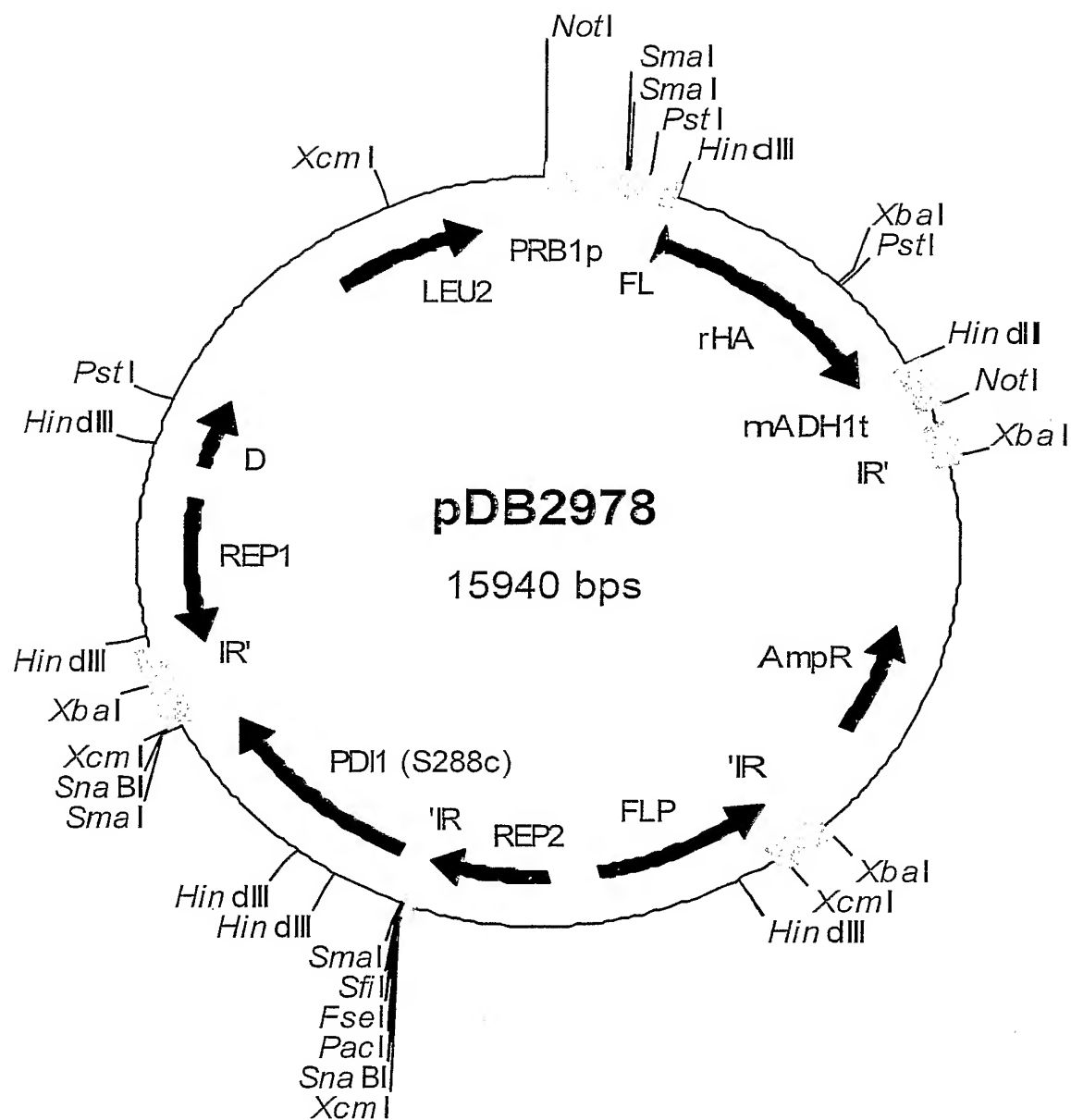
**Figure 62**

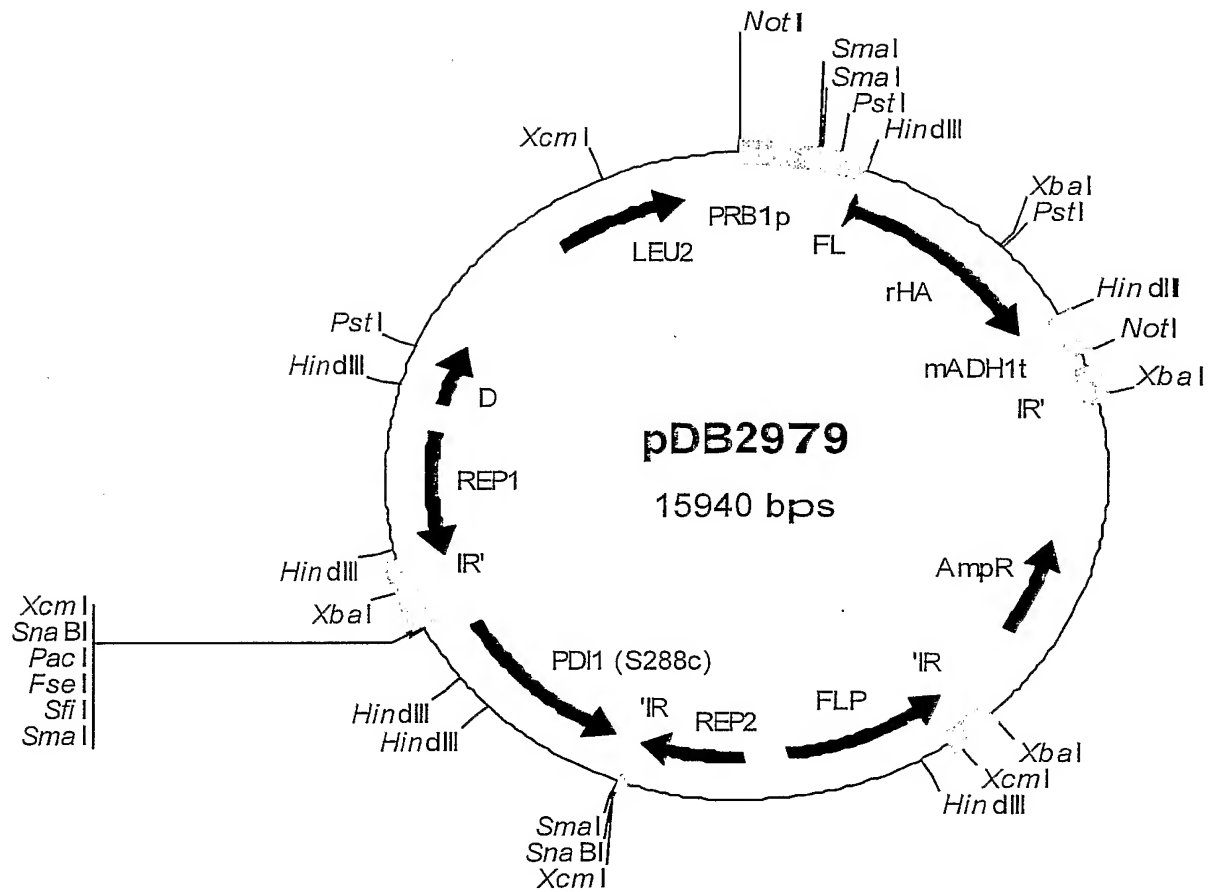
**Figure 63**

**Figure 64**

**FIGURE 65**

**FIGURE 66**

**FIGURE 67**

**FIGURE 68**

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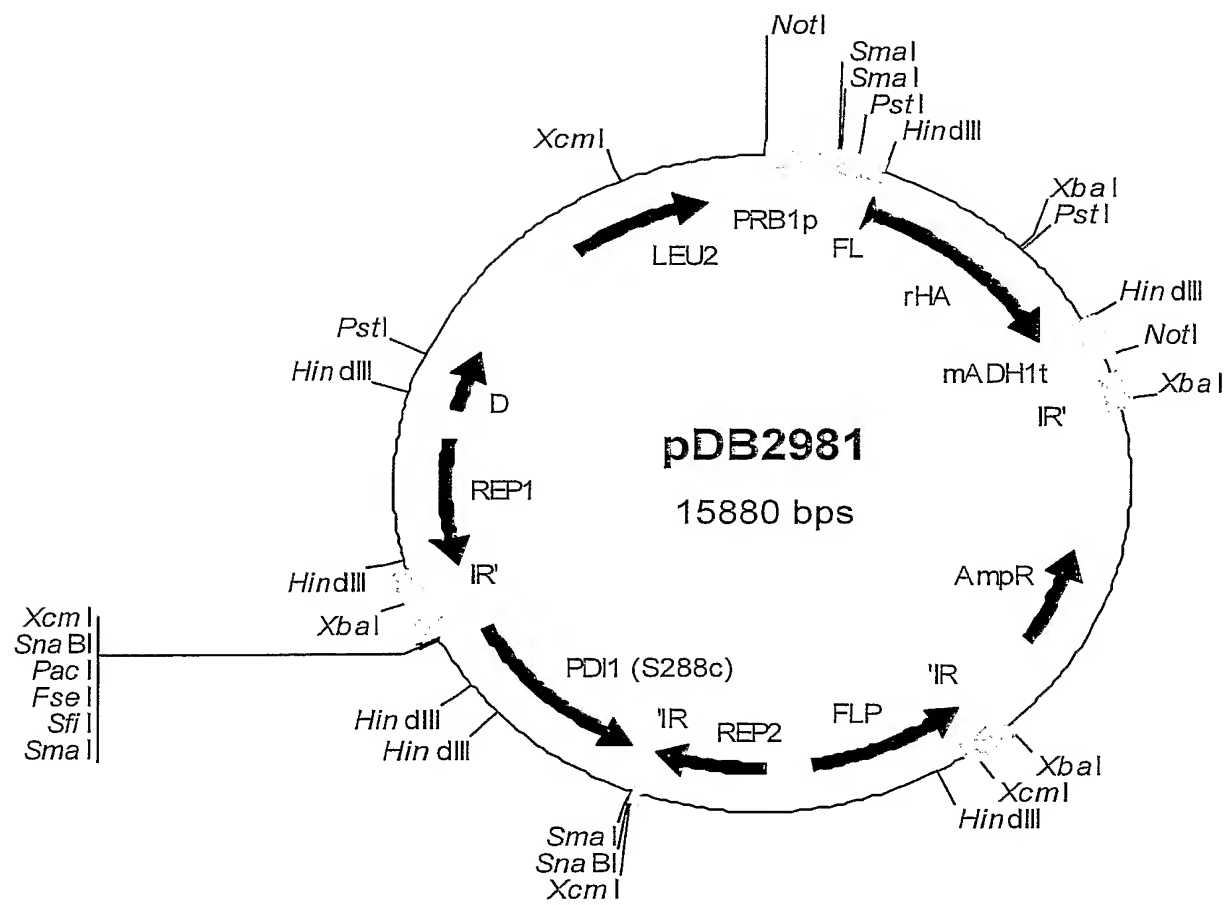
Genetic elements and features shown on the map:

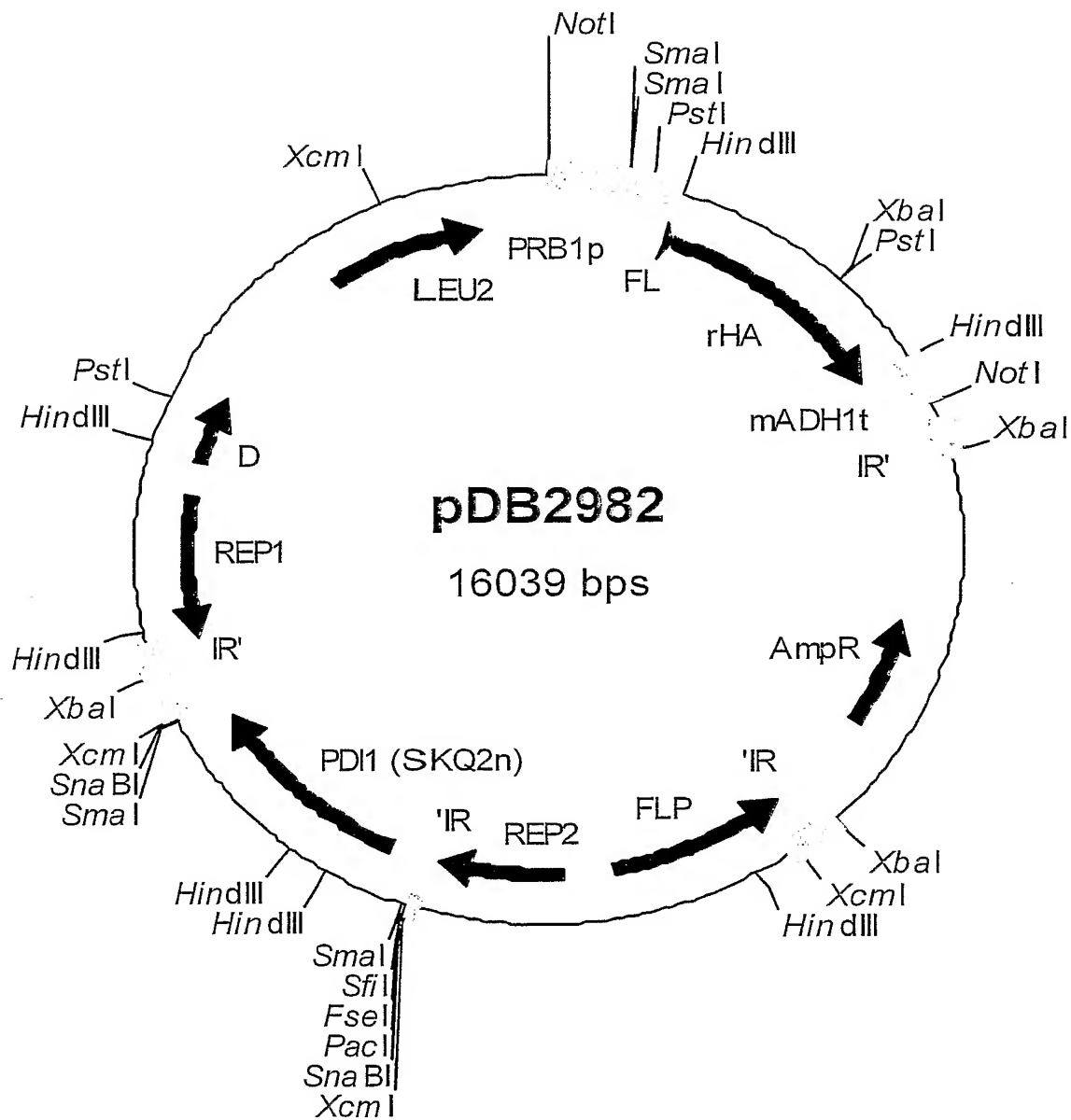
- PRB1p (Plasmid Replication Origin)
- LEU2
- FL
- rHA (Replication Helper)
- mADH1t
- IR'
- AmpR (Ampicillin Resistance)
- PDI1 (S288c)
- IR
- REP2
- REP1
- IR'
- D (Direct Repeat)

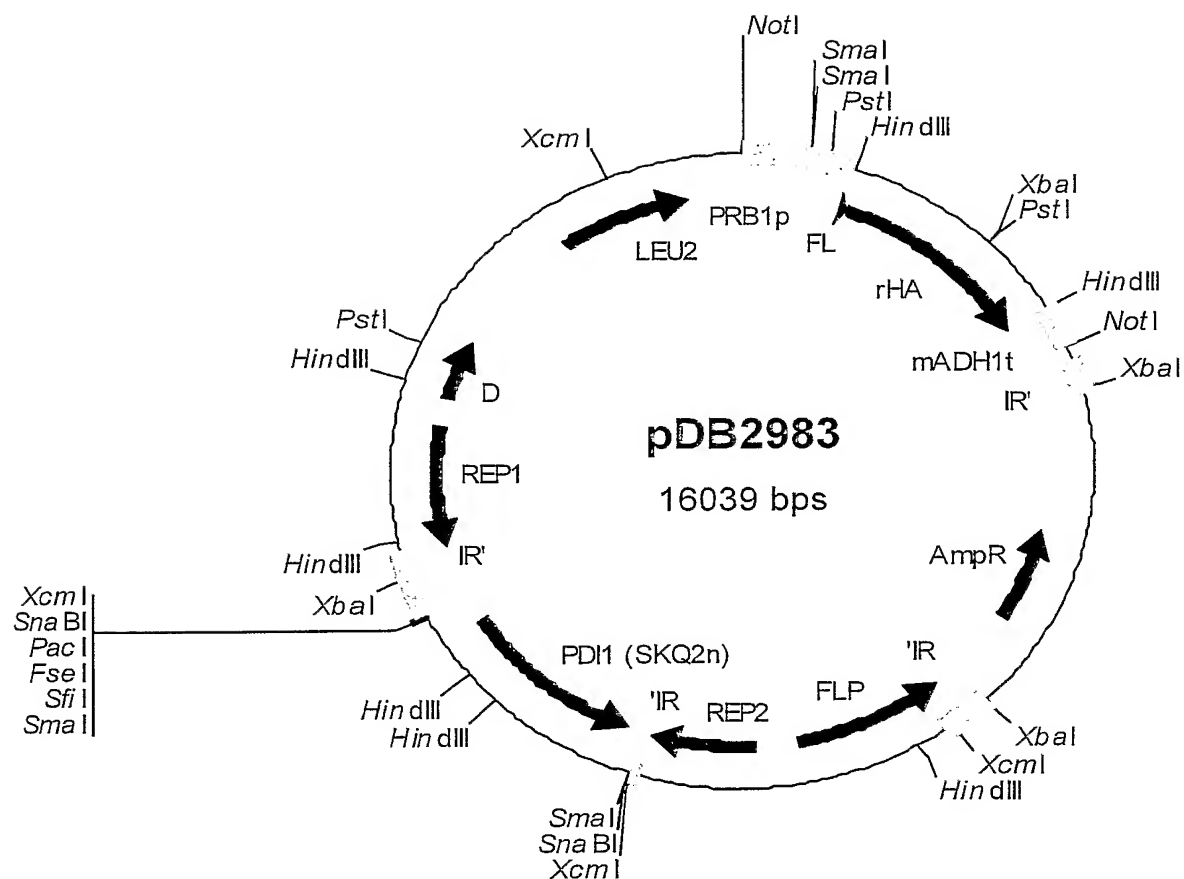
Restriction enzyme sites marked on the map:

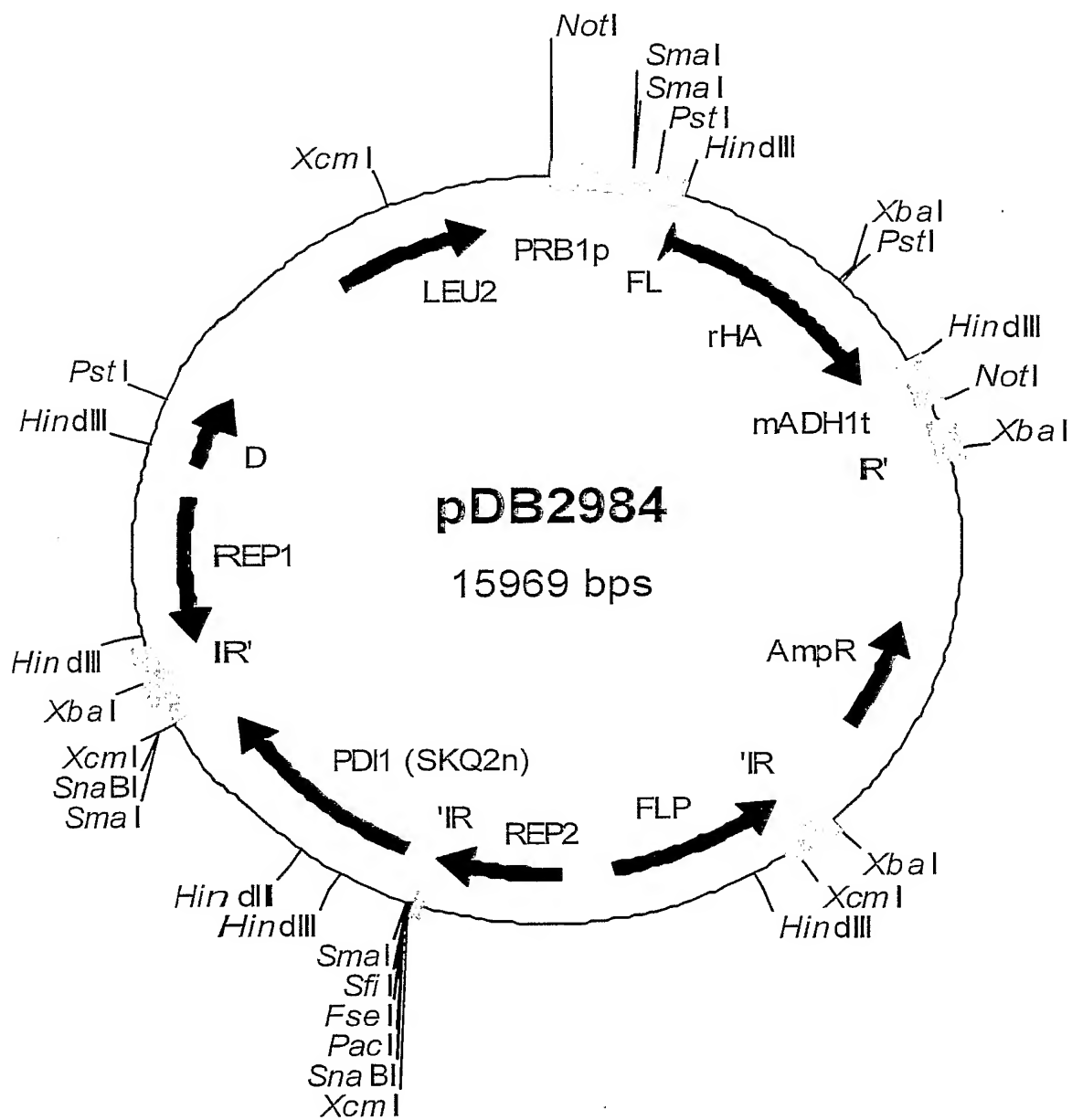
- NotI
- SmaI
- PstI
- HindIII
- XbaI
- XcmI
- SnaBI
- SfiI
- FseI
- PacI
- XcmI

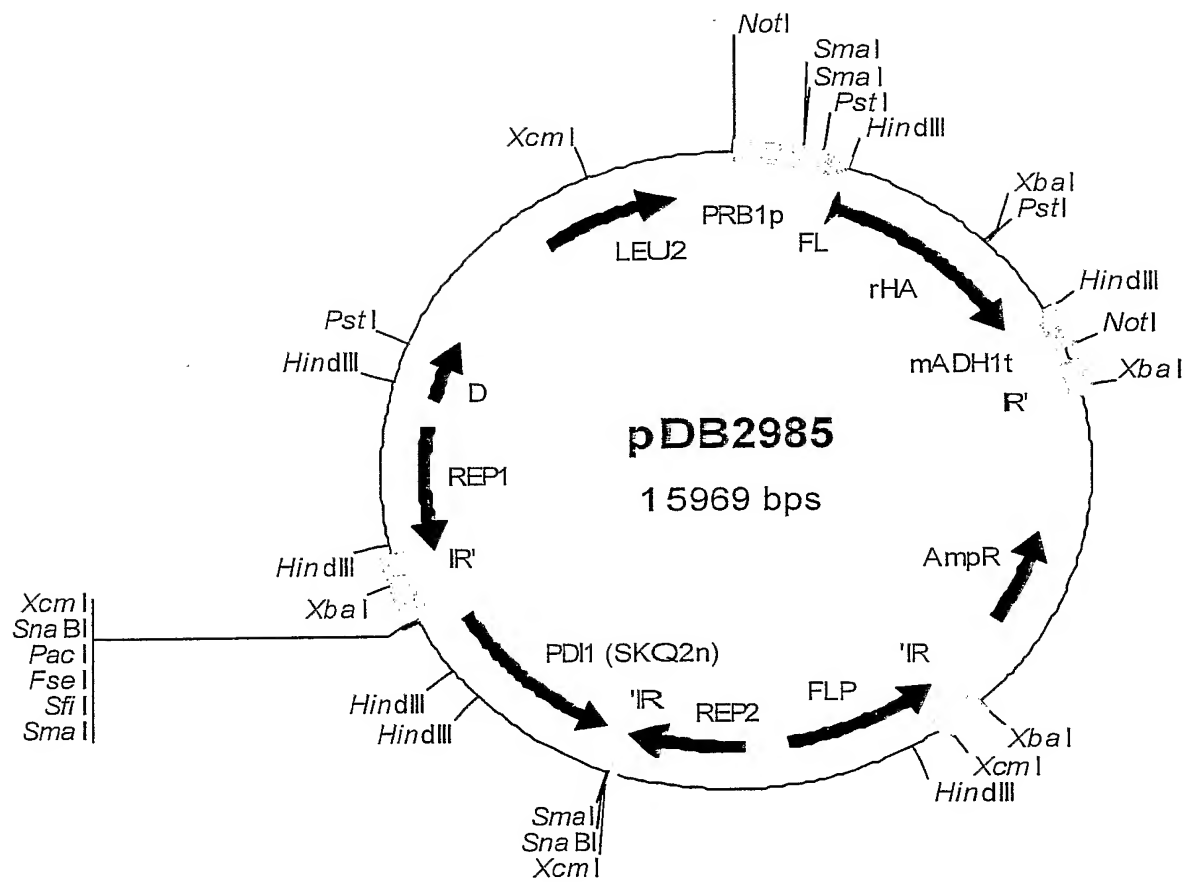


**FIGURE 70**

**FIGURE 71**

**FIGURE 72**

**FIGURE 73**

**FIGURE 74**

**FIGURE 75**

